

THE EFFECT OF ESG ON FINANCIAL
PERFORMANCE AMONG MALAYSIAN PUBLIC
LISTED COMPANIES

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DECLARATION

I hereby declare that:


(1) This Research Project is the end result of my own work and that due acknowledgement has been given in the references to all sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

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DEDICATION

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LIST OF ABBREVIATION

ESG	Environment, Social and Governance
E	Environment
S	Social
G	Governance
CSR	Corporate Social Responsibility
ROA	Return of Assets
ROE	Return of Equity
SRI	Social Responsible Investing
EES	Economic, Environment and Social
PB	Price to Book
SR	Stock Return
RU	Resource used
EM	Emissions
IN	Innovations
WO	Workforce
HU	Human Right
CO	Community
PR	Product Responsibility
MA	Management
SH	Shareholders
UTAR	Universiti Tunku Abdul Rahman

D/E	Debt-to-equity ratio
POLS	Pooled Ordinary Least Squares
OLS	Ordinary Least Squares
FE	Fixed Effects
GMM	Generalized Method of Moments
MLE	Maximum Likelihood Estimation
F	Firm Size
L	Leverage
C	Cash
TQ	Tobin's Q

PREFACE

The research is being carried out as part of the Master of Business Administration (MBA) curriculum at Universiti Tunku Abdul Rahman (UTAR) under the subject MKMA25106 - Research Project. The main title of the research project is the effect of ESG on financial performance among Malaysian public listed companies.

The objective of the research is to gain knowledge on the inter-relationship among the ESG main scores and ESG sub-dimensions scores and the financial performance among Malaysian public listed companies.

The research also plans to investigate the most significant dimension of ESG toward the ROA, ROE and Tobin'Q ratio of the public listed companies in Malaysia. The three main dimensions of ESG used are Environment, Social and Governance. The ten sub-dimensions of ESG used are resource use, emissions, innovations, workforce, human right, community, product responsibility, management, shareholders, and CSR strategy.

ABSTRACT

This thesis examines the relationship between Environmental, Social, and Governance (ESG) factors and financial performance among Malaysian public listed companies. The growing awareness of sustainability issues and the increasing demand for responsible corporate behavior have prompted organizations to incorporate ESG considerations into their strategic decision-making processes. This study aims to shed light on the potential impact of ESG practices on financial performance in the Malaysian context.

The research adopts a quantitative approach, utilizing financial data and ESG ratings for a sample of Malaysian public listed companies over a specified time period. Multiple regression analysis is employed to explore the association between ESG performance and financial indicators such as return on assets, return of equity, Tobin's Q ratio and stock return performance.

The implications of this research contribute to the existing literature on ESG and financial performance by providing empirical evidence from the Malaysian context. The findings offer valuable insights for policymakers, investors, and corporate managers, emphasizing the importance of incorporating ESG considerations into decision-making processes. This study underscores the potential for sustainable business practices to create value not only for the environment and society but also for the financial performance of companies.

Chapter 1 Introduction

1.0 General Overview

In recent years, there has been a rising significance placed on environmental, social, and governance (ESG) factors in both business decision-making and investment strategies. Research indicates that companies prioritizing ESG factors may potentially experience improved long-term financial performance and mitigate risks related to sustainability concerns. However, the existing body of literature exploring the connection between ESG and financial performance remains inconclusive and lacks investigation in specific contexts, such as Malaysia. As a result, the objective of this study is to examine the impact of ESG on the financial performance of public listed companies in Malaysia.

1.1 Background of the study

Investors nowadays demand more information from companies than ever before to attract their attention. The well-known financial crisis that happened in the US brought businesses' ethical conduct, accountability for risks, and capacity to strategically attract a wide spectrum of investors under scrutiny. The financial crisis not only affected firm performance but also raised social concerns such as unemployment and poverty. Over the past few years, many NGOs and government authorities have put pressure on companies to comply with certain standards in their business practices. This is where the concept of environmental, social, and governance (ESG) aspects was introduced.

ESG investing has gained traction as a result of changes in demand across the financial industry, driven by both the pursuit of higher long-term financial value and a desire for better value alignment. Beyond that, ESG can safeguard investors' assets, while for businesses, it has emerged as a crucial component of competitive strategy.

Recent years have witnessed significant advancements in standardizing and quantifying metrics used to assess how well-performing businesses are in terms of ESG factors. Investor interest in businesses that score well in terms of their ESG performance or demonstrate a serious commitment to ESG objectives has increased. However, shockingly few businesses have actually achieved significant ESG commitment improvements. Only a small portion of the 2,000 worldwide firms tracked by the World Benchmarking Alliance have declared sustainability goals, and among those that do, not all are on track to meet them (World Benchmarking Alliance, 2022). Even growing companies tend to make only incremental improvements and fail to implement the fundamental strategic and operational changes needed to fulfill the Paris Agreement or the Sustainable Development Goals (Tolliver et al., 2019). The majority of businesses still view sustainability as an afterthought—a concern related to reputation, rules, and reporting rather than an integral part of their corporate strategy. This disconnect is mainly due to the fact

that the ESG performance system is not tied to company performance in terms of profitability and share price.

ESG has become an essential aspect of a country's development, especially in Malaysia. At the Corporate Social Responsibility Conference on June 21, 2004, the Malaysian government made it clear that sustainability initiatives, such as CSR and ESG, help increase a company's market value by enhancing brand image, improving financial performance, and attracting and retaining the best employees (Said et al., 2009). This view is further supported by the ninth prime minister, Datuk Seri Ismail Sabri, who mentioned that our country is committed to building an ecosystem capable of promoting ESG-friendly activities and job markets, as promised when tabling the 12th Malaysia Plan (12MP) in the Dewan Rakyat (Malaymail, 2022).

This investigation focuses on companies in Malaysia, as they serve as an important case study for ESG research. Since Malaysia began implementing its first Corporate Social Reporting (CSR) Framework in 2006, it has been at the forefront of ESG developments. The first sustainable development report from Malaysia was published in 1987. (Mohammad & Wasiuzzaman, 2021).

1.2 Problem Statement

In recent years, there has been a growing recognition of the importance of Environmental, Social, and Governance (ESG) issues in the business world. Companies are facing increasing pressure from stakeholders to address these issues, as they can have a significant impact on a company's financial performance through various channels, including reputation, risk management, and innovation. While some studies have explored the connection between ESG and financial performance, there is a lack of research specifically focusing on the sub-dimensions of ESG and their impact on the financial performance of Malaysian public listed companies.

Following Malaysia's downgrading to Tier 3 in the US State Department's Trafficking in Persons Report, increased scrutiny of Malaysian corporations' environmental, social, and governance (ESG) standards is predicted. This follows US Customs and Border Protection (CBP) investigations against many Malaysian corporations and product seizures at US ports for allegedly using forced labor in their manufacturing. As ESG is becoming more significant to investors globally, this allegation will have a negative impact on the Malaysian economy (Azhar K., 2021).

Banks in Malaysia are adopting more ecologically and socially responsible financial and operational practices by working to include ESG aspects into their governance, corporate strategy, operational planning, and risk management. 90% of the 14 banks in Malaysia that were polled claimed to have a department devoted to operationalizing ESG, indicating progress in creating governance and supervision over ESG risks (Fintech News Malaysia, 2021). However, based on the Top 100 public listed companies published by Bursa Malaysia, the banking sector only accounts for 14%. Other sectors such as healthcare, construction, plantation, and automotive are not yet ready to adopt ESG as part of their sustainability initiatives.

There is a frequent query from the public regarding whether advancing the ESG agenda requires forgoing corporate earnings. Business leaders need to be mindful that some shareholders might think that a constant ESG focus is harmful or

sacrifices financial shareholder returns. The shift from a world of financial shareholder primacy to a more inclusive stakeholder capitalism encompasses a wide range of problems, including voter rights, worker activism, gender and racial diversity, and more. Business executives must handle trade-offs in each of these ESG components (Moyo, 2022). Before implementing ESG components into their business strategy, companies need to be well-prepared as it costs time and money to train the workforce. The relationship between investment in research and development (R&D) and the importance of ESG reporting may vary depending on the industry, company, and specific circumstances. While R&D investment can contribute to innovation, product development, and competitive advantage, ESG reporting focuses on a company's environmental, social, and governance performance.

The subject of Environmental, Social, and Governance (ESG) performance has attracted considerable attention in recent years, accompanied by skepticism and conflicting findings that raise concerns and interest. One area of debate revolves around the potential placebo effect of Environmental, Social, and Governance (ESG) considerations and their effectiveness in protecting investors during challenging times, such as the financial crisis (Nejati et al., 2010). The Amsterdam Declaration on Transparency and Reporting advocates for an international system that promotes transparency, accountability, and public disclosure of ESG performance to address the primary causes of economic crises (Global Reporting Initiative, 2009). Despite a lack of empirical studies examining the exact role of ESG performance during these periods, valuable insights have been gained from the global financial crisis of 2008-2009. Nonetheless, contradictions and ambiguities impede a thorough analysis of the subject, with results varying depending on various factors such as the nation, the sector, the capital markets, the legal system, the governance structure, and the reporting requirements.

Over the past decade, numerous studies have explored the relationship between ESG performance and financial performance. However, these studies have generated conflicting findings, leading to debate in the field. (Alareeni & Hamdan, 2020; Khoury et al., 2021, R. el Khoury et al., 2022; Janicka & Sajnóg, 2022; Mohammad & Wasiuzzaman, 2021; Tarmuji et al., 2016). Some researchers have

discovered a positive correlation between ESG scores and corporate financial success (Z. Li et al., 2022; Ng et al., 2020; Paolone et al., 2022; Weber, 2014), others have found the opposite (Duque-G. & Aguilera-C., 2021; Folger-Laronde et al., 2022; Garcia & Orsato, 2020) or mixed results (Buallay, 2019; Giannopoulos et al., 2022; R. E. L. Khoury et al., 2021). This discrepancy in findings highlights a significant research gap.

This research gap is particularly important in the context of Malaysia, as it is an emerging market with a substantial presence of large companies operating across diverse industries such as oil and gas, manufacturing, and financial services. Furthermore, Malaysia has made notable strides in adopting and implementing policies and initiatives related to sustainable development and responsible business practices. The country has embraced frameworks like the Sustainable Development Goals (SDGs) and the Malaysian Code on Corporate Governance, demonstrating its commitment to promoting sustainability and good governance in the business landscape. However, it remains unclear to what extent these efforts have translated into enhanced financial performance among publicly listed companies in Malaysia.

Previous research has primarily investigated the relationship between ESG (Environmental, Social, and Governance) factors and firm financial performance by considering ESG as a whole. However, this approach has created a research gap because the different dimensions of ESG possess distinct characteristics. To address this gap and gain a more comprehensive understanding of ESG, this study aims to evaluate all three main dimensions (Environmental, Social, and Governance) and their ten sub-dimensions both collectively and individually. Moreover, since most existing ESG studies have primarily focused on the United States and the United Kingdom, this study expands its scope to include businesses in Malaysia. Therefore, the primary objective of this study is to examine the impact of ESG on the financial performance of publicly listed companies in Malaysia. By doing so, it seeks to enhance our knowledge of how ESG influences financial performance specifically within emerging economies. The findings of this study will provide valuable insights into the extent to which ESG issues affect financial performance in the Malaysian context and their significance for investors, decision-makers, and businesses.

1.3 Research Questions

This research aims to answer the following research questions:

1. What is the relationship between ESG dimension and financial performance among Malaysian public listed companies?
2. What is the relationship between ESG sub-dimension and financial performance among Malaysian public listed companies?

1.4 Research Objectives

The purpose of the research is to examine the inter-relationship among ESG rating and firm financial performance among Malaysian public listed companies.

1. To examine the relationship between ESG dimension and financial performance among Malaysian public listed companies.
2. To examine the relationship between ESG sub- dimension and financial performance among Malaysian public listed companies.

1.5 Scope of research

The objective of this research is to analyze the impact of environmental, social, and governance (ESG) factors on the financial performance of publicly listed companies in Malaysia. The study will involve examining publicly available information, such as sustainability reports, annual reports, and other disclosures, to evaluate the extent of ESG practices implemented by companies. Accounting-based metrics of financial performance, including return on assets (ROA), return on equity (ROE), Tobin's Q, and stock returns, will be utilized to explore the relationship between ESG practices and financial performance. The sample will consist of companies listed on Bursa Malaysia, the primary stock exchange in Malaysia, over a five-year period (2017-2021) to ensure data consistency and adequate coverage. This research aims to contribute to the existing body of knowledge on the association between ESG and financial performance by offering insights specific to the Malaysian context.

1.6 Significance of the study

The influence of environmental, social, and governance (ESG) factors, along with their sub-dimensions, on financial performance has become a subject of great interest among diverse stakeholders, including investors, policymakers, and businesses on a global scale (Fernandez-Feijoo et al., 2014). However, the existing literature on the relationship between ESG and financial performance remains inconclusive and lacks research from specific contexts, such as Malaysia. Therefore, this study aims to investigate the effect of ESG and its sub-dimensions on the financial performance of Malaysian public listed companies.

This study holds several key significances. Firstly, it contributes to the expanding body of research on the link between ESG and financial performance. By focusing on the Malaysian context, which has received relatively less attention compared to other nations, this study fills a gap in the literature and provides valuable insights into the unique characteristics of the Malaysian market. Furthermore, it explores the potential advantages of ESG practices and their sub-dimensions for financial success within the Malaysian context. The findings from this study can serve as a foundation for future researchers interested in studying not only the main dimensions of ESG but also its sub-dimensions and their impact on firm performance.

Additionally, this study demonstrates that firms prioritizing ESG considerations may reap financial benefits, as it examines the impact of ESG on financial performance. The results can encourage more companies to embrace environmentally and socially responsible business strategies (Jermsittiparsert et al., 2019). Furthermore, the study holds practical implications for Malaysian company managers and executives. They can leverage the findings to better comprehend the advantages of integrating ESG practices into their company goals. This may lead to improved financial outcomes and enhanced relationships with stakeholders.

Lastly, this study carries significant implications for investors who increasingly consider ESG factors when making investment decisions. By gaining a better understanding of the risks and opportunities associated with sustainable

investments in Malaysia through the study's findings, investors can make more informed choices. The outcomes of the research can also influence policymakers aiming to promote ESG practices among Malaysian businesses, as it demonstrates the potential for enhanced financial performance and positive social and environmental outcomes (Hezri & Dovers, 2006).

Chapter 2 Literature Review

2.0 Introduction

This chapter provides an extensive review of the literature concerning the environmental, social, and governance (ESG) dimension, subdimensions, and their impact on firm performance. The chapter will commence by examining the evolution and development of ESG, encompassing all its dimensions. Furthermore, the theoretical underpinnings of ESG will be explored, including past theoretical frameworks that have contributed to the understanding of these concepts. To establish a solid foundation for the study, a conceptual framework will be constructed, accompanied by the formulation of hypotheses. The chapter will culminate with an empirical review, focusing on the empirical evidence and research findings regarding the relationship between ESG dimensions, their subdimensions, and firm performance. By providing a comprehensive synthesis of the existing literature, this chapter will lay the groundwork for the subsequent analysis and investigation of the interrelationships among ESG, its subdimensions, and firm performance.

2.1 Development of Environment, Social and Governance(ESG)

Twenty financial institutions developed the term ESG in a 2004 research in response to a request from Kofi Anon, Secretary-General of the United Nations. (Gillan et al., 2021). The term "ESG," which stands for "environmental, social, and governance," refers to how companies and investors incorporate these challenges into their business plans. Additionally, it helps investors analyze business behavior. ESG is the most recent concept used by firms to assess their non-financial performance, building upon the foundations of socially responsible investing (SRI) and corporate social responsibility (CSR). While CSR implicitly includes governance concerns related to environmental and social issues, SRI utilizes financial resources and investment operations to align with institutional values or further the institution's mission (Caplan L et al., 2013; Gillan et al., 2021).

Over time, ESG has developed into a comprehensive framework for evaluating a company's overall sustainability performance. Initially, ESG investing catered to socially responsible investors seeking alignment between their values and investments. However, the concept of ESG investing has expanded to include mainstream investors who recognize the potential financial benefits of integrating ESG factors into their investment decisions. Consequently, ESG investing has emerged as a significant force in the investment world.

ESG ratings and rankings play a crucial role in enabling investors to assess companies' non-financial performance. Various organizations, such as MSCI, Sustainalytics, and Refinitiv, provide ESG ratings and rankings. Currently, Bloomberg, MSCI, and Refinitiv (previously known as Thomson Reuters) are the leading international providers of financial and non-financial data services. Refinitiv is gradually strengthening its internal ESG expertise, and investors can readily access raw financial data through these providers. These ratings and rankings offer investors a means to compare companies' ESG performance and evaluate their sustainability practices.

2.1.1 Environmental Dimension

Environmental issues play a crucial role within the ESG framework, specifically focusing on a company's impact on the natural environment. This dimension encompasses several sub-dimensions that assess a company's environmental performance and sustainability. These sub-dimensions include resource use, emissions, waste management and resource efficiency, pollution and toxic substance management, and biodiversity and ecosystem protection. Companies that effectively manage natural resources, reduce harmful emissions, and invest in innovation are more likely to minimize their environmental impact and ensure long-term sustainability.

Resource use is a pivotal aspect of the environmental sub-dimension. Efficient resource management, such as electricity and water, has been found to contribute to greater financial performance. For example, Flammer (2015) discovered that enterprises with higher resource efficiency exhibited higher profitability and reduced volatility. Similarly, D'Inverno et al. (2021) found that organizations with strong water management practices outperformed their peers in terms of financial performance and risk. Supply chain management is also assessed within this sub-dimension, evaluating a company's environmental practices throughout its supply chain, including supplier selection and environmental impact management. Companies that prioritize sustainable practices and minimize their environmental impact are more likely to achieve better scores in this sub-dimension (Brammer et al., 2012). Waste management and resource efficiency are also evaluated within the environmental sub-dimension. This aspect examines a company's use of natural resources such as water, electricity, and raw materials, as well as its waste management practices. Businesses that practice sustainable resource management and take initiatives to reduce waste output are more likely to score well in this sub-dimension (Qin et al., 2019).

Emissions are another critical aspect of the environmental sub-dimension. Companies that reduce their greenhouse gas and other pollutant emissions not only benefit the environment but also enhance their own financial performance (Lins et al., 2017). Firms can achieve emissions reduction by implementing sustainable

practices such as reducing energy use, adopting cleaner production methods, and utilizing alternative fuels.

Carbon emissions and climate change are included within this sub-dimension (Oktay et al., 2021). Companies that take steps to lower their carbon footprint and embrace more sustainable practices are more likely to receive better scores in this sub-dimension. Biodiversity and ecosystem protection are also considered within the environmental sub-dimension. This aspect evaluates a company's impact on biodiversity and ecosystems, including activities related to protected area management, land use practices, and conservation efforts (Suzuki et al., 2021). Companies that prioritize conservation and take actions to protect biodiversity are more likely to perform well in this sub-dimension. Pollution and toxic compounds are additional sub-dimensions evaluated within the environmental dimension. This sub-dimension investigates a company's management of pollution and toxic substances, encompassing the usage and disposal of hazardous materials and compliance with relevant regulations. Companies that prioritize the reduction of their environmental impact through pollution reduction and the control of harmful chemicals are more likely to achieve higher scores in this sub-dimension (Oyewo, 2023).

Lastly, the environmental sub-dimension places significant emphasis on innovation. Companies that invest in research and development to develop environmentally-friendly technologies and practices have demonstrated superior financial performance. According to Liao et al. (2021), companies that invest in environmental innovation can positively enhance both their financial and environmental performance. Another study conducted by Bocken et al. (2014) discovered that companies implementing sustainable business models and innovation achieve higher financial performance and lower risk. Firms that can innovate and develop sustainable practices can gain a competitive advantage and improve their financial performance (Xu et al., 2021). However, the relationship between environmental innovations and firm performance is complex and depends on various factors such as industry, firm size, and regulatory environment (Goyal et al., 2013).

Overall, the literature suggests that effective resource management, reduction of harmful emissions, and investment in innovation are critical for businesses to reduce their environmental impact and ensure long-term sustainability. Companies that prioritise environmental responsibility can improve their financial performance and produce long-term value for their shareholders.

2.1.2 Social Dimension

The social sub-dimension of ESG is concerned with a company's impact on society and its stakeholders, including employees, customers, suppliers, and the communities in which it operates. This sub-dimension can be broken down into four main areas: workforce, human rights, community, and product responsibility.

One area of the social sub-dimension is the workforce. This includes issues such as employee diversity, fair labor practices, and employee well-being. A study by Pandey (2020) found that companies with more diverse workforces tend to have better financial performance. Another study by Barnea & Rubin (2010) found that firms that treat their employees fairly and have good labor practices tend to have higher valuations and lower risk. Furthermore, a study by Rasheed et al. (2018) found that employee well-being is positively associated with firm performance. These findings suggest that investing in a diverse, fairly treated, and well-supported workforce can have positive effects on a company's financial performance. As businesses see the benefits of having a more varied and inclusive workforce, diversity and inclusion have become increasingly crucial in the workplace. According to research, diverse teams are more innovative and better able to address complicated problems (H. Tang, 2022). Furthermore, businesses that value diversity and inclusion are more likely to attract and retain outstanding talent (Guzzo et al., 2020). Nevertheless, fostering diversity and inclusion takes more than simply recruiting varied personnel; it also necessitates the development of a culture that recognizes and respects difference. Furthermore, companies that prioritize

employee well-being, such as offering flexible work arrangements, are more likely to retain their employees and have higher productivity (Greenhaus et al., 1990).

Another important aspect of the social sub-dimension is human rights. This includes issues such as human trafficking, forced labor, and child labor. Companies that are found to have human rights violations can face legal action, reputational damage, and financial losses. A study by G. Chen et al. (2006) found that firms with higher human rights scores tend to have better financial performance and lower risk. This suggests that respecting human rights can be an important factor in a company's overall success. Moreover, businesses that are devoted to safeguarding human rights are more likely to maintain healthy relationships with their stakeholders and prevent reputational damage (Fasciglione, 2016).

The community sub-dimension of social ESG includes issues such as community engagement, philanthropy, and social impact. A study by Aydoğmuş et al. (2022) found that companies that engage in corporate social responsibility activities tend to have better financial performance. Another study by Liu et al. (2019) found that firms with higher levels of social impact tend to have higher valuations and lower risk. These findings suggest that companies that engage with their communities and make a positive impact can reap financial benefits. Besides, businesses that prioritize community relations are more likely to retain favorable stakeholder relationships and prevent reputational damage (Carroll & Shabana, 2010).

Finally, product responsibility is another important aspect of the social sub-dimension. This includes issues such as product safety, quality, and ethical sourcing. A study by Hu et al. (2021) found that firms with better product quality tend to have higher valuations and lower risk. Another study by Y. Li (2018) found that companies that engage in ethical sourcing tend to have better financial performance. These findings suggest that ensuring product responsibility can be an important factor in a company's financial success.

Overall, the literature suggests that investing in a diverse, fairly treated, and well-supported workforce, respecting human rights, engaging with communities, and ensuring product responsibility can all have positive effects on a company's

financial performance. By prioritizing social responsibility, companies can not only do good for society but also create long-term value for their shareholders.

2.1.3 Governance Dimension

Governance is an essential dimension of ESG that addresses a company's internal and external management practices, including its shareholder engagement, corporate social responsibility strategies, and the effectiveness of its board of directors. Many studies have been conducted on the relationship between governance practices and firm performance, yielding mixed findings. This literature review aims to explore existing research on governance and its impact on firm performance, with a specific focus on management, shareholder engagement, and corporate social responsibility.

Competent management practices are crucial for the achievement of a company, and robust governance is imperative to ensure that management decisions prioritize the interests of all stakeholders. According to Deakin et al. (2017), sound corporate governance contributes to establishing a stable and foreseeable business environment, which is vital for sustained prosperity. Furthermore, Cuong & Lan (2021) conducted a study revealing that firms with effective governance practices typically exhibit superior financial performance and enhanced resilience against economic upheavals.

Board composition is another crucial aspect of corporate governance, and having a diverse board has been shown to contribute to firm success. Gul et al. (2011) discovered a favorable correlation between board diversity and corporate performance, indicating that boards with diverse members tend to make better decisions and achieve better financial results. Similarly, Carter et al. (2003) discovered that organizations with diverse boards of directors were more likely to make better judgments and achieve higher financial success. These studies highlight the significance of considering diversity when selecting board members and encouraging diversity in business leadership positions.

Shareholder engagement is another important element of corporate governance that has gained significant attention in recent years. Paskelian and Bell (2009) found that firms with stronger shareholder rights tend to have higher valuation, profitability, and lower agency costs. Shareholder rights refer to the extent to which shareholders can influence company decisions and hold the board and management accountable. Businesses with robust shareholder rights often incorporate measures that allow shareholders to elect board members, approve significant decisions such as mergers and acquisitions, and vote on executive compensation packages. High shareholder rights are associated with better firm performance and a lower likelihood of fraud and misconduct (Becht et al., 2005). However, the level of shareholder rights varies significantly among countries and regions, with some governments offering greater shareholder protection than others (La Porta et al., 2008).

Corporate social responsibility (CSR) is an integral component of governance, and companies that actively participate in socially responsible practices often achieve superior outcomes in terms of reputation, customer loyalty, and employee satisfaction. Kolk and van Tulder (2010) observed that CSR initiatives have a positive influence on firm performance and contribute to the long-term creation of value. Similarly, Xie et al. (2017) determined that CSR activities can enhance a company's financial performance by enhancing its reputation and mitigating risks.

To summarize, the implementation of effective governance practices is essential for companies to attain enduring success and generate sustainable value. This review of relevant literature underscores the significance of management practices, shareholder engagement, and corporate social responsibility within the framework of governance, and their influence on firm performance. The reviewed studies present a combination of findings, with some indicating a positive correlation between sound governance practices and firm performance, while others suggest no substantial association. Nonetheless, companies that prioritize the adoption of strong governance practices are more likely to navigate economic and market uncertainties adeptly, foster robust stakeholder relationships, and establish long-term value creation.

2.1.4 CSR and ESG

CSR, or Corporate Social Responsibility, is a concept that pertains to a company's voluntary endeavors to support social and environmental causes that are not directly linked to its core business operations. According to Carroll (1991), CSR comprises four interconnected elements: economic, legal, ethical, and philanthropic responsibilities. The economic responsibility entails being profitable and delivering a return on investment to shareholders. The legal responsibility involves compliance with all applicable laws and regulations. The ethical responsibility entails doing what is right and fair, even when it is not legally mandated. Lastly, the philanthropic responsibility involves contributing to society and enhancing the well-being of communities (Markopoulos et al., 2021).

Businesses with high social responsibility ratings find it easier to attract qualified personnel. Therefore, practicing social responsibility is crucial to enhance the confidence and expectations of stakeholders and society (Turban & Greening, 1997). Organizations are advised to choose a CSR strategy that integrates with the organization's core capabilities to achieve effective positive outcomes. Additionally, it should be integrated into the organization's strategy, processes, and operations (Aguinis et al., 2020).

ESG, which stands for Environmental, Social, and Governance, is a holistic framework that assesses a company's sustainability performance based on various environmental, social, and governance factors. ESG factors cover a broad spectrum of issues, such as carbon emissions, labor practices, executive compensation, board diversity, and community involvement. ESG has gained growing significance for investors who aim to invest in companies that align with their values and have a positive influence on society and the environment. (Eccles & Serafeim, 2013).

Although CSR and ESG share the same objectives of promoting sustainability and responsible corporate behavior, ESG is a more structured approach that assesses a company's sustainability performance across multiple factors. In contrast, CSR typically focuses on voluntary actions that are not immediately related to a company's core business activities. However, companies that engage in CSR

initiatives can also benefit from enhanced ESG performance, indicating that CSR and ESG are not mutually exclusive.

2.2 ESG in Malaysia

In recent years, there has been a growing interest in environmental, social, and governance (ESG) issues, particularly in the context of corporate practices and investments. In Malaysia, the government and Bursa Malaysia, the national stock exchange, have implemented ESG initiatives and regulations to promote sustainable business practices and responsible investment.

One of the earliest initiatives was the introduction of the Corporate Social Responsibility (CSR) framework in 2006, which requires companies to disclose their CSR initiatives and practices in their annual reports. Bursa Malaysia has recognized the significance of CSR and developed a framework that outlines CSR across four dimensions: workplace, marketplace, community, and environment.

The workplace dimension focuses on employee well-being, diversity, and employee development. Several studies have highlighted the positive outcomes of CSR initiatives in the workplace. For instance, research conducted by Euwema et al (2005) has shown that promoting employee well-being and providing a safe working environment can enhance employee satisfaction, engagement, and productivity. The marketplace dimension emphasizes ethical business conduct, customer satisfaction, and supplier relations. Studies consistently demonstrate that ethical business practices contribute to enhancing a company's reputation and brand image, resulting in increased customer loyalty and positive financial performance (Sen et al., 2006). The community dimension emphasizes community engagement, philanthropy, and education. Research suggests that companies actively engaging with the community through philanthropic activities and social investments can strengthen their social license to operate and enhance their reputation (Brammer et al., 2007). The environment dimension highlights the importance of environmental conservation and sustainable practices. Numerous studies have emphasized that implementing environmental conservation measures, such as reducing carbon emissions, water usage, and waste generation, not only contributes to the preservation of natural resources but also leads to cost savings and improved operational efficiency (Porter & Van Der Linde, 2017).

By addressing these four dimensions—workplace, marketplace, community, and environment—companies listed on Bursa Malaysia can effectively integrate CSR initiatives into their operations, resulting in benefits for employees, customers, communities, and the environment. This framework was further supported by the introduction of the FTSE4Good Bursa Malaysia Index in 2014, which identifies companies that meet globally recognized ESG standards. The index is part of the FTSE4Good Index Series and aligns with other ESG frameworks such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (Atan et al., 2018).

In addition to these initiatives, Bursa Malaysia released a Sustainability Reporting Guide in 2015 to provide guidance for companies on how to report their sustainability statements in their annual reports. This guide uses the Economic, Environment, and Social (EES) framework to view sustainability, with the governance component being covered under the detailed and precise disclosure requirements for corporate governance in the Listing Requirements (Sustainability Reporting Guide, 2015).

Overall, the Malaysian government and Bursa Malaysia have taken significant steps to promote ESG integration in investment practices in Malaysia. With the increasing awareness of ESG issues globally and the growing demand for responsible investing, it is expected that these initiatives will continue to gain momentum and drive positive change in the business landscape in Malaysia.

2.3 Theory of ESG

Overall, ESG theory is relevant to a range of theoretical perspectives, including stakeholder theory, institutional theory, and legitimacy theory. ESG factors are increasingly being integrated into business decision-making, stakeholder engagement strategies, regulatory frameworks, and sustainability reporting, as companies seek to demonstrate their commitment to social and environmental responsibility and maintain their reputation and legitimacy.

2.3.1 Stakeholder theory

The predominant approach to comprehending business and management theory was created at a time when uncertainty was much less of a concern. During that period, concepts such as bureaucracy and equilibrium were prevalent and useful. However, stakeholder theory emerged over the last 40 years to challenge this widely held notion. (R. E. Freeman et al., 2010). According to stakeholder theory, a firm's long-term performance depends on how well it manages its interactions with all of its stakeholders. The internal stakeholders include employees, shareholders, and management, while external stakeholders encompass individuals outside the company such as competitors, collaborators, customers, and other parties capable of influencing company performance (R. E. E. Freeman & McVea, 2005).

According to Velte (2017), effective sustainability management, which encompasses ESG reporting, is crucial for addressing the concerns and needs of diverse stakeholders. Another study by Khan (2022) highlights the importance of disclosing a company's sustainability management to protect the interests of all stakeholders. By reporting ESG data to the public, firms demonstrate their commitment to stakeholders' interests, including customers and employees, which can increase employee satisfaction. Reporting of ESG data to the public shows that a firm values the interests of its stakeholders, including its customers and employees, which could increase employee satisfaction (el Akremi et al., 2018; Lyon & Montgomery, 2015). Thus, ESG reporting serves as evidence that businesses are

striving to meet the needs of their diverse stakeholders. When businesses disclose ESG information to stakeholders, they not only demonstrate their dedication to fulfilling social and environmental responsibilities but also assure stakeholders that they are acting in their best interests (Xu et al., 2022).

2.3.2 Institutional Theory

Institutional theory has been extensively used to understand how organizations respond to social and environmental issues, including those related to ESG (Environmental, Social, and Governance) factors. The theory posits that organizations are influenced by external pressures from their institutional environment, including regulatory frameworks, norms, and expectations, which shape their behavior and actions (DiMaggio & Powell, 1983). Institutional theorists argue that organizations are constrained by these external pressures, which often lead to the adoption of socially and environmentally responsible practices, even if they are not fully aligned with the organization's interests or goals (Oliver, 1991).

More recent research has focused on how institutional pressures related to ESG issues affect firm performance and financial outcomes. For example, Ioannou & Serafeim (2015) found that firms with strong ESG performance experienced higher financial returns and lower risk, suggesting that institutional pressures to adopt ESG practices can have positive financial implications. Similarly, a study by Flammer (2015) found that firms with high ESG performance were more likely to receive favourable credit ratings and lower borrowing costs.

However, some research has found a link between institutional pressures and financial success, particularly in emerging markets. For example, Szegedi et al. (2020) discovered that environmental performance has a detrimental impact on corporate performance in Pakistan. They imply that institutional forces in emerging economies are less successful in promoting ESG practices, and that enterprises may lack the resources needed to engage in socially responsible practises. Furthermore, institutional pressures may differ among areas and countries, impacting the adoption and effectiveness of ESG practises. For example, Jo and Harjoto (2012)

discovered that nations with stronger institutional systems have a stronger positive association between social responsibility and financial performance.

Despite the growing interest in institutional theory for understanding ESG issues, some scholars have pointed out limitations and challenges in its application. For instance, Greenwood & Suddaby (2006) argue that institutional theory tends to focus on mimetic behaviour and symbolic conformity, and may not fully capture the heterogeneity and complexity of organizational responses to institutional pressures.

2.3.3 Legitimacy Theory

Legitimacy theory highlights the importance for businesses to consider the rights and expectations of both the general public and their investors. When a company fails to meet societal expectations, it may face various consequences, such as legislative constraints on its operations or limited access to resources, including capital with higher borrowing costs (Deegan, 2013). A community that values ESG standards may be reluctant to support businesses with poor ESG performance, making it challenging for such companies to secure the necessary support and resources to sustain their operations (Eliwa et al., 2021).

Several scholars in the field of sustainable finance utilize legitimacy theory as a theoretical framework to understand the relationship between ESG practices and organizational legitimacy (Juliao-Rossi et al., 2022). According to legitimacy theory, a company's engagement in ESG efforts demonstrates its aspiration to claim moral authority within the social contract (Scherer & Palazzo, 2011). In addition, the ESG score serves as evidence of the company's commitment to transparently disclose its socially responsible behavior. Consequently, the ESG score becomes a robust indicator of the firm's pursuit of legitimacy (Minutolo et al., 2019).

By adhering to ESG standards and actively engaging in sustainable practices, companies strive to establish and maintain a legitimate position in the eyes of their stakeholders. This legitimacy is crucial for businesses to gain trust and support from

various stakeholders, including customers, employees, investors, and the wider society. When companies embrace ESG principles, they send a signal that they are not only focused on their financial performance but also recognize their responsibility towards social and environmental issues (Freeman & McVea, 2005).

Moreover, legitimacy theory suggests that businesses that prioritize ESG practices are more likely to enjoy long-term success and resilience. As stakeholders increasingly demand greater transparency and accountability from companies, those that demonstrate their commitment to ESG principles are better positioned to navigate complex and uncertain business environments. By aligning their operations with societal expectations and demonstrating their dedication to sustainable practices, companies can strengthen their legitimacy and build enduring relationships with stakeholders (Deegan, 2013).

To sum up, legitimacy theory emphasizes the importance of businesses acknowledging the rights and expectations of the general public and investors. Adopting ESG practices enables companies to assert their moral commitment to the social contract and exhibit transparent and socially responsible conduct. This approach enhances their legitimacy, builds trust with stakeholders, and contributes to their long-term viability and adaptability in an ever-evolving business environment.

2.4 ESG ratings and firm performance

ESG ratings have garnered considerable interest in recent times due to their perceived ability to offer valuable insights into a company's non-financial performance. The objective of this literature review is to examine the current body of research concerning the connection between ESG ratings and firm performance.

Previously many studies had looked at the relationship between the ESG ratings and the firm performance by measuring their Return of Asset (ROA), Return of Equity (ROE), Price to Book (PB), Stock Return (SR), Tobin Q (Alareeni & Hamdan, 2020; Albitar et al., 2020; Chen & Xie, 2022; Kengkathran, 2019; Khoury et al., 2021; Kumar & Firoz, 2022; Mohammad & Wasiuzzaman, 2021; Ngoc B.V., 2022). Some studies are linked the ESG with the size of board and the gender diversity in the board. Many of the study are looking at only one component of the ESG which is either environmental, social or governance. This research will cover all three components of ESG, in order to provide a holistic approach.

In addition, some studies suggest that the resource-based theory and stakeholder theory can provide a useful framework for understanding the relationship between ESG ratings and firm performance (Gillan et al., 2021). Some studies have examined the relationship between ESG ratings and cost of capital. For example, Chung et al. (2018) found that higher ESG ratings can increase a firm's cost of capital, suggesting that ESG performance may be viewed as a risk factor by investors.

There is no mention of how well-known, high-quality, brand-equity, and safe the companies are, as claimed by Bassen & Kovács (2008) in the financial records of the corporations. In light of this, ESG measures cover a wide range of data regarding corporate governance and environmental social performance. Therefore, it is essential to provide general ESG disclosure information, especially for management and other interested parties. Numerous studies have looked into how ESG rating affects firm performance, however the outcomes of those studies have varied. Some of them state that there have been positive, negative, and neutral effects (Qiu et al.,

2016), while others have found that there are U-shaped or inverted U-shaped associations. One of the studies discovered that ESG rating could increase a firm's costs, making it economically disadvantageous (Yoon et al., 2018).

Both the resource-based theory and the stakeholder theory largely support the favourable correlation between ESG rating and firm performance. By implementing ESG rating, it can help to gain the competitive advantage and improve the stakeholder relationship (Albitar et al., 2020). Therefore, based on the preceding literature discussion, we proceed to examine the following hypothesis.

H1 : ESG rating affects firms' performance.

Table 1: Literature on the relationship between ESG rating and firm performance

Author	ESG Measures	Performance Measures	Country	Relationship
Alereeni and Hamdan (2020)	ESG performance index	ROA, ROE and Tobin's Q	USA	Positive Relationship
Khoury et al (2021)	ESG Pillar	ROA, ROE, PB, SR	East Asian	No relationship
R. el Khoury et al (2022)	ESG performance index	ROA, ROE, PB, SR	G20 countries	Positive Relationship
Janicka and Sajnóg (2022)	ESG factors	Market capitalisation	European Union	Positive Relationship
Mohammad and Wasiuzzaman (2021)	ESG disclosure index	Firm competitive advantage and Tobin-Q	Malaysia	Positive Relationship

Tarmuji et al (2016)	ESG practices	Economic performance	Malaysia and Singapore	Positive Relationship
Li et al. (2022)	ESG Performance index	Stocks prices	China	Positive Relationship
Ng et al (2022)	ESG scores	Financial development	Asia	Positive Relationship
Paolone et al (2022)	ESG scores	Inflation factor	European Union	Positive Relationship
Weber (2014)	ESG Reporting	Financial return	China	Positive Relationship
Duque-G. & Aguilera-C (2021)	ESG scores	ROA	Latin America	Negative Relationship
Folger-Laronde et al. (2022)	ESG Ratings	Financial return	Canada	Negative Relationship
Garcia & Orsato (2020)	ESG Performance	ROA, Leverage (LEV)	United States, Europe, South Africa, Brazil	Negative Relationship
Buallay (2019)	ESG scores	ROA,ROE,Tobin-Q	Europe, Japan, Canada	Mixed relationship
Giannopoulos et al. (2022)	ESG disclosure index	ROA, Tobin-Q	Norway	Mixed relationship
R. E. L. Khoury et at. (2021)	ESG score	ROA, ROE, SR, Price-to-book (PB)	G20 countries	Mixed relationship

2.4.1 Environment rating and firm performance

Long-running and still unresolved is the controversy around the link between environmental performance (E) and firm performance. Karagozoglu & Lindell (2000) highlighted the significance of an environmental strategy's proactivity in launching a platform for environmental innovation, which will become a competitive advantage for the company. Another group of researchers found the opposite result, which environment rating is negative related with the firm performance. There won't be any incentives, and there will be a trade-off between advantages and costs to the firm because rigorous environmental legislation and environmental investment by businesses, according to traditional economics researchers (K. H. Lee et al., 2016). Alareeni & Hamdan (2020) had found that the relationship between environmental disclosure and the firms' performance of the S&P 500 in the United States is negative. It is important to note that this outcome can be the result of companies' environmental disclosure procedures, which will result in increased costs and ultimately higher pricing.

Local researchers have also investigated the connection between firm performance and environmental ratings and regulation. Companies must spend their money wisely by doing an accurate environment assessment before engaging in environmental activities and product development. By doing this, it will be ensured that the company's reputation among its stakeholders is unaffected (Saleh et al., 2011). The local study conducted by Smith found that the environmental disclosure is positively link to the firm performance.

H2 : Environmental rating will positively affect firms' performance.

The proficient utilization of resources within the environmental aspect of ESG is crucial for firm performance. Studies have indicated that implementing sustainable resource utilization practices can yield positive effects on a company's performance. Skillful management of natural resources, including energy, water, and raw materials, has been associated with cost savings, heightened operational efficiency, and improved environmental performance. (Epstein & Roy, 2001). Additionally, integrating sustainable practices into the supply chain, such as responsible sourcing

and eco-friendly packaging, can lead to improved supplier relationships, customer satisfaction, and operational resilience, all of which positively influence firm performance (Sarkis et al., 2011). Overall, by effectively utilizing resources within the environmental sub-dimension of ESG, firms can achieve sustainable competitive advantage and improved financial performance.

H2a : Resource used will positively affect firms' performance.

The management of emissions within the environmental sub-dimension of ESG is increasingly recognized as a crucial factor affecting firms' performance. Research has shown that emissions, particularly greenhouse gas emissions, can have direct impacts on various aspects of firm performance. High levels of emissions can result in regulatory compliance challenges, financial penalties, and reputational risks for firms. Failure to manage emissions effectively may lead to legal liabilities, increased operational costs, and damage to a firm's reputation and brand image (Doan & Sassen, 2020). Consequently, firms that actively mitigate emissions and adopt emission reduction strategies are more likely to demonstrate regulatory compliance, avoid financial penalties, and maintain a positive reputation, which can positively influence their performance.

H2b : Emissions will positively affect firms' performance.

The significance of innovation in the environmental aspect of ESG has attracted substantial scholarly interest, owing to its potential to have a positive impact on firm performance. Studies have demonstrated that companies that prioritize environmental innovation can reap various advantages, which in turn lead to enhanced performance. Environmental innovation has the potential to bolster a firm's reputation and brand image. By showcasing a dedication to sustainability and environmental responsibility through innovative practices, companies can establish trust among stakeholders, including customers, investors, and communities. (Delmas & Pekovic, 2013). A positive reputation for environmental performance can result in improved relationships with stakeholders, access to capital, and enhanced market positioning.

H2c : Innovation will positively affect firms' performance.

2.4.2 Social rating and firms' performance

The social rating (S) segment of ESG involves assessing the influence of a company on society, encompassing factors such as employee treatment, community engagement, and social responsibility initiatives. An expanding body of research has examined the correlation between a company's social rating and its financial performance.

Several research have discovered a link between social ratings and financial performance. Brammer et al. (2007) for example, examined the social ratings of 2,033 companies and discovered that greater social ratings were connected with better financial performance. Similarly, Oikonomou et al. (2012) investigated the social ratings of 1,879 companies and discovered that companies with higher social ratings outperformed the stock market.

The relationship between social factors and company performance has been the subject of investigation by researchers. However, the findings from these studies have yielded contradictory outcomes. Some researchers argue that investments in environmental and social Corporate Social Responsibility (CSR) initiatives strengthen stakeholder identification with the focal enterprises and contribute to their legitimacy, ultimately enhancing firm performance (Cantele & Zardini, 2018; Yang & Baasandorj, 2017). In contrast, other studies have discovered that these CSR initiatives may have negative or negligible influence on business success. According to these research, social CSR and environmental conservation initiatives can work together only if businesses can get sufficient benefits from their CSR efforts to offset their expenses (Cao et al., 2023; González-Rodríguez et al., 2019; Inoue & Lee, 2011).

In a study conducted by Johnson and Greening (2018), a large sample of U.S. companies was examined to investigate the connection between social responsibility and firm financial performance. The results of the study revealed no

significant correlation between social responsibility and firm financial performance, suggesting that social performance does not have a direct influence on financial outcomes. Similarly, Lee and Faff (2021) conducted a study focusing on a sample of Australian firms to examine the direct impact of social responsibility on firm performance. Their findings also indicated no significant relationship between social responsibility and firm performance, further supporting the notion that the social dimension of ESG does not directly impact financial performance.

The foregoing explanation demonstrates that studies' findings have been inconsistent. As a result, it is important to periodically review the findings and conduct additional study. Overall, the literature reveals a positive relationship between social ratings and financial performance, but the relationship is not always consistent across studies. The contradictory results could be attributed to discrepancies in measurement, sample selection, or other causes.

H3 : Social rating will positively affect firms' performance.

The role of the workforce within the social sub-dimension of ESG is crucial for firms' performance. Effective talent management practices play a significant role in firms' performance. By attracting, developing, and retaining top talent, organizations can gain a competitive edge. Studies have shown that firms that invest in employee training and development programs, provide opportunities for career growth, and foster a positive work environment, are more likely to have skilled and committed employees who contribute to increased productivity and overall firm success (Guest, 2017). By prioritizing employee engagement, diversity, inclusion, and talent management, firms can create a positive work environment, harness the benefits of a diverse workforce, and attract and retain top talent.

H3a : Workforce will positively affect firms' performance.

The consideration of human rights within the social sub-dimension of ESG is increasingly recognized as a critical factor in firms' performance. Promoting human rights can contribute to employee well-being, engagement, and productivity. Organizations that provide a safe, inclusive, and respectful work environment,

respecting the rights and dignity of employees, are more likely to attract and retain talented individuals (Kramar, R., Bartram, T., & De Cieri, 2013). A motivated and engaged workforce can positively impact productivity, innovation, and overall firm performance.

H3b : Human right will positively affect firms' performance.

Research has consistently demonstrated that actively engaging with the community can have positive effects on various dimensions of firm performance. Community engagement can foster innovation and create business opportunities. Collaborating with local communities, non-profit organizations, and other stakeholders can provide firms with valuable insights, ideas, and resources (Schaltegger et al., 2012). This collaboration can lead to the identification of new markets, product development opportunities, and innovative solutions, positively impacting a firm's competitiveness and financial performance.

H3c : Community will positively affect firms' performance.

The consideration of product responsibility within the social sub-dimension of ESG is crucial for firms' performance. Companies that prioritize product responsibility are more likely to enhance their reputation and brand image. By ensuring the safety, quality, and sustainability of their products, firms can build trust and credibility with customers (Auger et al., 2008). This positive reputation can result in increased customer loyalty, brand equity, and market share, ultimately impacting a firm's financial performance.

H3d : Product Responsibility will positively affect firms' performance.

2.4.3 Governance and firms' performance

Corporate crises often arise due to ineffective organizational design and culture, individuals with questionable ethics, and short-term pressures resulting from market forces. Conflicts of interest among stakeholders commonly lead to corporate misconduct, which in turn affects firm performance (Connelly et al., 2022; Naumovska et al., 2020). Therefore, the establishment of effective corporate governance is crucial in enhancing firm performance for the benefit of shareholders and other stakeholders, ensuring the sustainability of businesses (Fama & Jensen, 1983).

The effects of corporate governance structures on firm performance have been examined in numerous studies. Studies on the connection between corporate governance and firm performance have produced conflicting findings thus far. Queiri et al. (2021) discovered that while some governance components exhibit a favourable correlation with company performance, others exhibit a negative correlation. Factors like board size and institutional ownership, were found to be positive and significant predictors of firm performance.

However, several studies have found no significant association between governance performance and firm financial performance. For instance, Gompers et al. (2020) examined a large sample of firms and found no significant relationship between various governance indicators and firm performance. Similarly, Klapper and Love (2021) analyzed a global dataset of firms and concluded that governance quality does not have a direct impact on firm financial performance.

Additional variables, including the frequency of board meetings, the proportion of independent directors, state ownership, and concentrated ownership, were identified as negative and significant indicators of firm performance. In light of these observations, we put forth the following hypothesis to assess the correlation between corporate governance and firm performance:

H4 : Governance will positively affects firms' performance.

Effective management practices can promote organizational resilience and adaptability. Research suggests that firms with strong governance structures and competent management teams are better equipped to navigate turbulent environments, manage risks, and seize opportunities (A.Hitt & Ireland, 2020). This adaptability enables firms to respond to market changes, technological advancements, and competitive pressures, contributing to sustained performance.

H4a : Management will positively affects firms' performance.

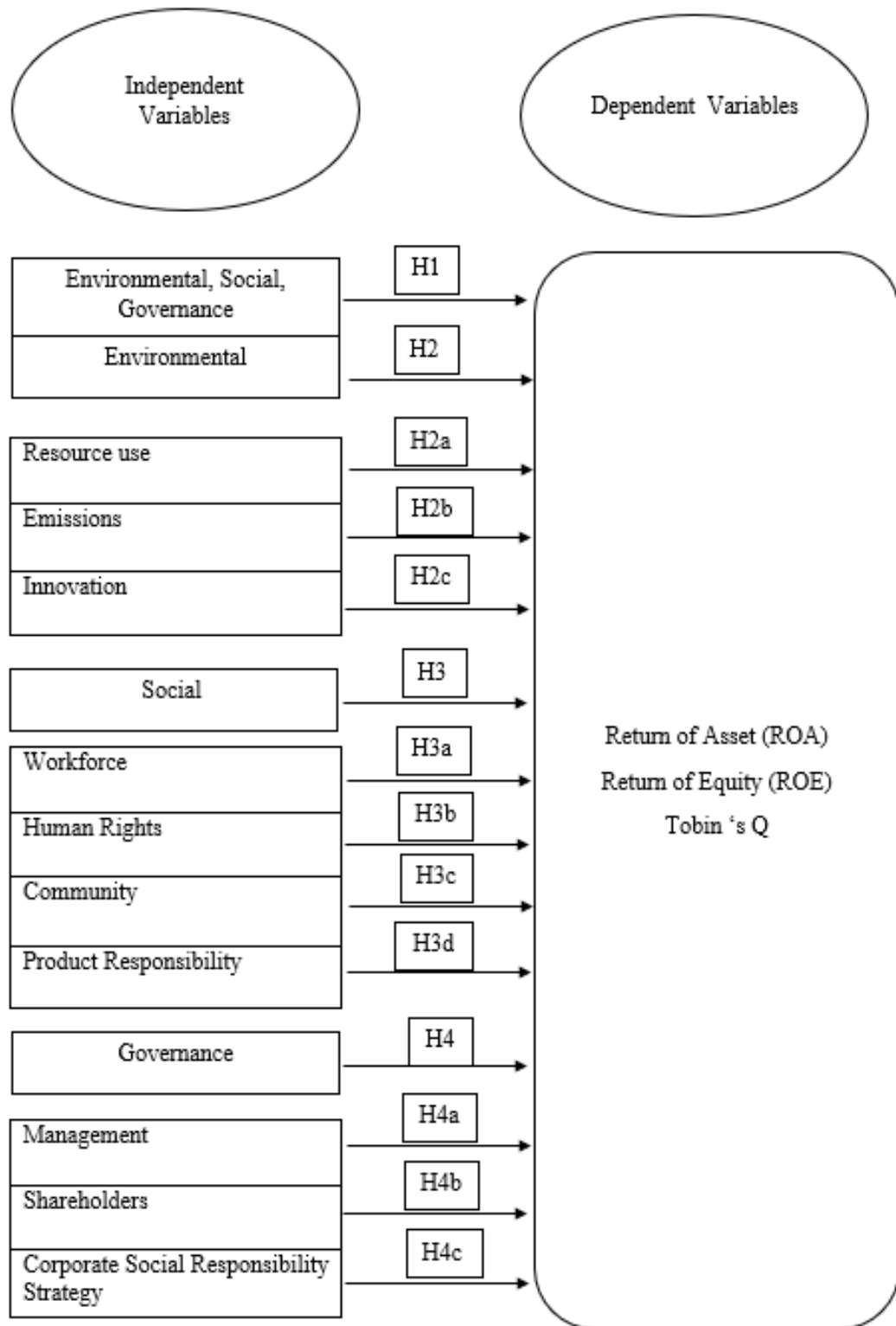
The consideration of shareholders within the governance sub-dimension of ESG is crucial for firms' performance. The presence of committed and long-term shareholders can positively impact a firm's financial performance. Research suggests that long-term shareholders, who have a genuine interest in the company's long-term success, are more likely to support sustainable value creation strategies and foster stability (Edmans et al., 2017). This stability can contribute to improved investment decisions, lower agency costs, and enhanced financial performance over time.

H4b : Shareholders will positively affect firms' performance.

A comprehensive CSR strategy can drive innovation and foster long-term value creation. By addressing societal challenges, companies can identify new market opportunities, develop sustainable products and services, and differentiate themselves from competitors (Kiron et al., 2015). This focus on innovation and creating shared value can contribute to sustained growth, competitive advantage, and long-term financial performance.

H4c : CSR strategy will positively affect firms' performance.

2.5 Theoretical Framework



Chapter 3 Methodology

3.0 Introduction

A research methodology involves a systematic and rigorous exploration of relevant information, encompassing key stages such as defining and refining the research topic, formulating theories or hypotheses, collecting, organizing, and evaluating data, and drawing conclusions. The obtained results are subsequently analyzed to determine their alignment with the initial assumptions made for the study.

The primary objective of this research is to examine the relationship between the main dimensions of Environmental, Social, and Governance (ESG) practices, their subdimensions, and firm performance within the context of publicly listed companies in Malaysia. This chapter encompasses various aspects of the research, including the research design, methods of data collection, sampling design, selection of research instruments, measurement of constructs, data processing, and data analysis.

3.1 Research Design

The process of combining various study components into a single coherent whole is known as research design. A strong and precise research design is crucial because it serves as a guide for the entire investigation. As a result, research is sometimes referred to as a master plan that outlines a course of action and offers logical decision-making and problem-solving options (Zikmund et al., 2010). The type of research to be done will depend on the study's outline. This comprises the study questions, variables chosen, hypotheses, data collection methods, and data analysis procedures, whether they are descriptive or experimental (Jalil, 2015).

Research can be split into a variety of categories, but the most prevalent categories are descriptive, correlational, causal, and experimental research (Sekaran & Bougie, 2016). Quantitative research and descriptive analysis will be the main foci of the project.

3.1.1 Quantitative Research

Quantitative research involves the collection and analysis of numerical data to identify patterns, calculate averages, predict outcomes, and assess causal relationships (Allen et al., 2013). This approach entails hypothesis testing and the collection of data through the distribution of questionnaires to targeted respondents (Sekaran & Bougie, 2016). The aim of quantitative research is to generate and apply various numerical models to the quantifiable information gathered, such as percentages and rates (Zikmund et al., 2010). In the field of business, quantitative research is commonly employed due to its ability to facilitate straightforward data analysis and processing. In contrast to qualitative research, which presents data in non-numerical formats like text, audio, or video, quantitative research emphasizes numerical measurements that allow for statistical analysis and hypothesis testing.

3.2 Refinitiv ESG Score

Refinitiv is widely acknowledged as a prominent provider of Environmental, Social, and Governance (ESG) data services, renowned for its extensive ESG database, which dates back to 2002. Their database encompasses over 630 distinct ESG criteria, covering more than 85% of the global market value (Environmental, Social and Governance (ESG) Scores from Refinitiv, 2022). Refinitiv gathers publicly available ESG data on companies and consolidates it to assign scores for 10 ESG categories. These scores are then compared against the corresponding Country Group or Industry Group in the Thomson Reuters Business Classifications. The categories include Environmental Innovation (IN), Resource Use (RE), Emissions (EM), Workforce (WO), Human Rights (HU), Community (CO), Product Responsibility (PR), Management (MA), Shareholders (SH), and Corporate Social Responsibility (CSR), as depicted in Figure 1 (Sahin et al., 2022).

The decision to exclusively source ESG data from the Refinitiv database is driven by several factors. Firstly, the database is known for its extensive coverage and accuracy of ESG-related information. It ensures that the researchers have access to reliable and up-to-date data, which is crucial for conducting a rigorous analysis and drawing meaningful conclusions.

Secondly, the Refinitiv database offers a comprehensive set of ESG metrics and indicators that align with widely accepted standards and frameworks. This ensures consistency in the data and enables the researchers to compare and analyze ESG performance across different companies and sectors effectively.

Furthermore, the Refinitiv database provides tools and functionalities that facilitate data retrieval and analysis. It offers search capabilities, data visualization options, and customizable reporting features, enabling the researchers to extract the specific ESG data points needed for their study and perform in-depth analysis. By exclusively relying on the Refinitiv database as the primary source of ESG data, the study benefits from a centralized and reliable repository of information. This approach ensures that the researchers have access to high-quality data that is relevant to their research objectives and supports the integrity and robustness of their findings.

Figure 1: Categories for ESG score



3.3 Data collection

3.3.1 Primary Data

Primary data refers to information that is directly collected from original sources using methods such as interviews, surveys, and experiments (Ajayi, 2017). This type of data is obtained firsthand from the original source. However, in the specific study being discussed, primary data collection will not be conducted. The selection and customization of primary data sources are typically done to align with the research project's objectives and criteria. Before gathering data, a target population is identified and defined. For this study, the primary data will primarily be obtained through the distribution of self-administered questionnaires. The use of questionnaires allows for the collection of the most up-to-date information and enables quick response turnaround.

3.3.2 Secondary Data

Secondary sources refer to data that has been previously collected by individuals or organizations other than the researcher (Ajayi, 2017). Unlike primary data, which is gathered firsthand, secondary data is derived from sources unrelated to the current study and was collected for different purposes at different time points in the past. In this particular research, a wide range of reputable journals from sources like the UTAR search engine, Emerald, Scopus, and ScienceDirect are utilized as secondary sources. These journals contain information obtained from previous literature reviews, journals, books, and other relevant sources.

For this study, the main focus is on collecting specific Environmental, Social, and Governance (ESG) data. To acquire this data, the researchers will primarily rely on the Refinitiv database as their main source of secondary data.

The Refinitiv database is recognized as a comprehensive and reputable platform that provides a wealth of financial and ESG-related information. It consolidates data from various reliable sources, including company reports, regulatory filings, and other pertinent documents. By leveraging this database, the researchers gain access to an extensive collection of ESG data pertaining to numerous companies across different industries and regions.

3.4 Study sample

In our study, we extract the company data from the Bursa Malaysia during the period 2017 to 2021. The Exchange is home to 949 publicly traded firms, the most of any ASEAN exchange, and it serves as a major location for raising capital thanks to its three listing platforms, including the Main Market, ACE Market, and LEAP Market, which are available to businesses of all sizes (Bursa Malaysia Berhad, 2021). A final sample size of top 100 companies from the Bursa Malaysia Main Market. The sample size of the top 100 companies is supported by previous research (Atan et al., 2016; Kengkathran, 2019; Tarmuji et al., 2016). According to Boyd et al. (2006), it is well known that firms engage in more ESG initiatives the larger their market capitalization.

Furthermore, the ESG ratings will be extracted from Refinitiv which used by many academics and investors (R. el Khoury et al., 2022; Janicka & Sajnóg, 2022; Pozzoli et al., 2022; Sahin et al., 2022) because it is a major data provider across the globe. Bursa Malaysia also provided a ESG ranking list that is being rate by FTSE Rusell, which categorize the Top 100 public listed company into 4 categories from 4 stars to 1 star. This is one of initiative taken by Bursa Malaysia to encourage and support the sustainability practiced among the companies in Malaysia.

3.5 Data Screening

This study employed specific criteria to select the sample. Firstly, the companies had to be listed on the Main Market of Bursa Malaysia, which serves as a premier market for established businesses that meet certain requirements in terms of operations, size, and quality. Companies aiming to be listed on the Main Market must demonstrate a minimum profit history or meet a minimum market capitalization threshold. Based on the information provided by Bursa Malaysia, the Top 100 firms listed on the Main Market were chosen as the sample for this research.

Secondly, companies that did not report any initiatives for one or more years between 2017 and 2021 were excluded from the dataset. During the period from 2017 to 2021, 41 out of the Top 100 firms listed on the Bursa Malaysia Main Market reported ESG. Consequently, the database included 205 observations from 41 firms. Appendix A contains a table listing the sampled companies used in this research.

3.6 Measurement of Variables

3.6.1 ESG rating

The ESG scores range from D- to A+, with A+ representing the highest possible grade for any given organisation. The ESG ratings are divided into twelve level: “D-”, “D”, “D+”, “C-”, “C”, “C+”, “B-”, “B”, “B+”, “A-”, “A” and “A+”. All the ESG scores will be assign to a number from 1 to 12 (Refer to Table 2), which the higher the number the better the grade (Feng et al., 2022; J. Tang et al., 2023).

Table 2: The assignment of ESG scores

ESG Scores	Numerical scores
A+	12
A	11
A-	10
B+	9
B	8
B-	7
C+	6
C	5
C-	4
D+	3
D	2
D-	1

3.6.2 Dependent variables

Financial Performance which is the dependent variable for this study can be assessed using accounting- and market-based metrics. Market metrics are sensitive to systematic risk while accounting measures are sensitive to company-specific risk (R. el Khoury et al., 2022).

ROA, ROE, Tobin's Q and stock returns are widely used financial indicators for measuring a firm's financial performance. These parameters have gained significant attention due to their ability to capture important aspects of a firm's operations, profitability, and market value. This literature review aims to analyze and summarize the existing body of research on the significance of ROA, ROE, Tobin's Q and stock returns as performance metrics for firms. The review encompasses studies from various disciplines, including finance, accounting, and economics, to present a comprehensive understanding of their implications.

ROA is a fundamental financial parameter that measures a firm's efficiency in utilizing its assets to generate profits. Numerous studies have identified ROA as a key indicator of operational effectiveness and resource management (D. D. Lee et al., 2009; Mustafa & Taqi, 2017) Researchers have demonstrated the relevance of ROA in assessing a firm's ability to generate earnings from its asset base, thus providing insights into its profitability and asset utilization (Habibollah N., 2021). ROA has been extensively utilized in analyzing industries and comparing firms' performance, enabling investors and analysts to make informed investment decisions (Jensen, 1993).

The formula for Return on Assets (ROA) is as follows:

$$ROA = \text{Net Income} / \text{Average Total Assets}$$

Where:

- Net Income signifies the earnings or profitability of a company after subtracting all costs and taxes during a designated timeframe.
- Average Total Assets indicates the mean value of a company's overall assets throughout a specified period. Typically, it is computed by summing the total assets at the start and end of the period, then dividing the sum by 2.

ROE is a widely recognized parameter that measures a firm's profitability from the perspective of its shareholders' equity investment. Researchers have emphasized the importance of ROE as a key indicator of a firm's ability to generate returns for its shareholders (Aamir Ali, 2017). ROE reflects the firm's efficiency in utilizing its equity capital to generate profits, providing insights into its profitability and shareholder value creation (Gürünlü, 2019). Studies have demonstrated the significance of ROE in evaluating a firm's financial health, growth potential, and competitiveness (Amran & Che Ahmad, 2014).

The formula for Return on Equity (ROE) is as follows:

$$ROE = \text{Net Income} / \text{Average Shareholders' Equity}$$

Where:

- Net Income denotes the company's profit or net earnings remaining after deducting all expenses and taxes during a specified timeframe.
- Average Shareholders' Equity represents the mean value of a company's shareholders' equity throughout a particular period. This value is typically obtained by adding the shareholders' equity at the start and end of the period and dividing the sum by 2.

Tobin's Q is a parameter introduced by James Tobin, which compares a firm's market value to the replacement cost of its assets. Researchers have highlighted the relevance of Tobin's Q in capturing the market worth and value creation potential of firms (Z. Chen & Xie, 2022; Nguyen et al., 2021). Tobin's Q serves as an important indicator of a firm's intangible assets, innovation, and growth opportunities (Nguyen et al., 2021). It has been utilized in assessing firms' investment decisions, market performance, and strategic competitiveness (Khelood A. Mkalaf, 2023; Stiroh, 2002).

The formula for Tobin's Q is as follows:

$$\text{Tobin } Q = (\text{Market Capitalization} + \text{Total Debt}) / \text{Total Assets}$$

Where:

- Market Capitalization denotes the complete value of a company's publicly traded shares in the stock market. This figure is determined by multiplying the current market price per share by the total number of outstanding shares. It serves as an indicator of the market's assessment of the company's worth.
- Total Debt refers to the cumulative amount of a company's outstanding liabilities, encompassing both long-term and short-term obligations. It encompasses various forms of borrowing, such as loans, bonds, and other financial liabilities.
- Total Assets signifies the aggregate value of all tangible and intangible assets owned by a company. Tangible assets encompass physical items like buildings, equipment, and inventory, while intangible assets include intellectual property, patents, and trademarks. Total assets represent the overall value of a company's possessions.

Stock return refers to the financial performance or profitability of a company's stock over a given period of time. It represents the percentage change in the price of a stock, considering any dividends or distributions received by the shareholder (Friede et al., 2015). Several studies have found a positive relationship between ESG scores and stock returns. Hong and Kacperczyk, (2009) examined a sample of U.S. firms and found that companies with higher ESG scores tend to outperform their counterparts in terms of stock returns. Similarly, Friede, Busch, and Bassen (2015) conducted a meta-analysis of over 2,000 studies and confirmed a positive relationship between ESG performance and financial returns. However, other studies present mixed or neutral results. Khan, Serafeim, and Yoon (2016) found that the relationship varies depending on the specific ESG dimension analyzed, with environmental and social factors showing a positive impact on stock returns while governance factors showed no significant relationship.

The formula for stock return is as follow:

$$\text{Stock Return} = \ln(P_2/P_1)$$

Where:

P_1 represents the initial stock price at the beginning of the period.

P_2 represents the final stock price at the end of the period.

3.6.3 Independent variables

This study examines the impact of ESG on the financial performance of Malaysian public listed company. The primary independent variable is the ESG score obtained from Refinitiv's database, which is regarded as one of the most trustworthy data sources (Galbreath, 2018).

The three main dimensions of ESG are as follows:

Environmental score: This includes factors such as a company's carbon footprint, energy efficiency, and waste management practices.

Social score: This includes factors such as a company's employee relations, community engagement, and human rights record.

Governance score: This includes factors such as a company's board structure, executive compensation, and transparency in financial reporting.

The ten subdimension of ESG are as follows:

Resource used score: This includes factors such as water consumption, energy usage, raw material sourcing, waste management, and overall resource efficiency.

Emissions score: The includes factors such as the company's carbon footprint, energy consumption, waste generation, water usage, and the effectiveness of emission reduction strategies.

Innovation score: This includes areas such as renewable energy, waste reduction, clean technologies, circular economy initiatives, and eco-friendly product design.

Workforce score: This evaluates factors related to employee well-being, diversity and inclusion, training and development, and employee satisfaction and engagement.

Human right score: This includes factors such as human rights policies, labour practices, supply chain transparency, grievance mechanisms, and human rights-related controversies or incident.

Community score: This includes factors such as community engagement activities, philanthropic contributions, economic indicators (e.g., local sourcing, job creation), and the effectiveness and impact of community initiatives.

Product responsibility score: This includes factors such as product safety records, customer satisfaction surveys, regulatory compliance records, responsible marketing practices, and efforts in sustainable product design and innovation.

Management score: This includes factors such as board diversity, independence ratios, executive compensation metrics, risk management frameworks, audit and compliance practices, and shareholder rights provisions.

Shareholder score: This includes factors such as shareholder rights provisions, voting structures, proxy access policies, shareholder engagement practices, and disclosure of governance information.

Corporate Social Responsibility (CSR) score: This includes factors such as CSR policies and commitments, board oversight of CSR, stakeholder engagement mechanisms and CSR reporting quality.

Table 3: Variables of the study

Dependent Variables	Explanation
Return on Assets (ROA)	Net Profit / Average total assets
Return of Equity (ROE)	Net Profit / Shareholder's equity
Tobin's Q	(Total assets + market capitalization – net worth) / Total assets
Stock returns	Natural logarithm (stock price Day 1 / stock price Day 2)
Independent Variables	Explanation
ESG	Environmental, social and governance performance scores collected from Refinitiv
ESG sub-dimensions	Resource used, emissions, innovation, workforce, human right, community, product responsibility, management, shareholder and corporate social responsibility.

3.6.4 Control Variables

Firm Size: Firm size is an important control variable in ESG research as larger firms may have more resources to devote to ESG initiatives. To control for the effect of firm size, we will use the natural logarithm of total assets (Ioannou & Serafeim, 2015; Najaf et al., 2020).

Leverage: Leverage is another important control variable in ESG research as firms with higher leverage may have less resources available to invest in ESG initiatives. To control for the effect of leverage, we will use the debt-to-equity ratio (D/E) (Oware & Mallikarjunappa, 2021).

Cash: This variable represents the amount of cash and cash equivalents that the company holds, which can provide an indication of the company's financial stability and flexibility. Higher cash reserves may allow companies to invest more in ESG initiatives without having to rely on external financing (Chava & Purnanandam, 2010).

3.7 Formulation of Hypotheses

H1 : ESG rating positively affects firms' performance.

H2 : Environmental rating will positively affect firms' performance.

H2a : Resource used will positively affect firms' performance.

H2b : Emissions will positively affect firms' performance.

H2c : Innovation will positively affect firms' performance.

H3 : Social rating will positively affect firms' performance.

H3a : Workforce will positively affect firms' performance.

H3b : Human right will positively affect firms' performance.

H3c : Community will positively affect firms' performance.

H3d : Product Responsibility will positively affect firms' performance.

H4 : Corporate governance will positively affects firms' performance.

H4a : Management will positively affects firms' performance.

H4b : Shareholders will positively affect firms' performance.

H4c : CSR strategy will positively affect firms' performance.

3.8 Overview of Diagnostic test

This research paper will utilize four separate examinations to evaluate the connection between the independent variables and dependent variables. The first examination is known as the Breusch-Pagan test, also referred to as the Breusch-Pagan-Godfrey test. This statistical assessment is frequently employed in econometrics to explore the existence of heteroscedasticity in a regression model. Heteroscedasticity refers to a scenario where the dispersion of the residuals (or errors) in a regression model varies across different levels of the independent variables, rather than staying consistent (Breusch & Pagan, 1979).

The widely used Breusch-Pagan test is employed to identify heteroscedasticity. This test involves regressing the squared residuals obtained from the original regression model against the independent variables or other factors that could potentially be linked to heteroscedasticity. By assessing the presence of a significant relationship between the squared residuals and the explanatory variables, this test determines whether heteroscedasticity is present or not (Gujarati, 2004).

The Hausman test is frequently utilized in the analysis of panel data to investigate potential errors in model specification. It evaluates the relationship between the error components and the independent variables in the model, aiding in the selection between a fixed effects model and a random effects model. The alternative hypothesis proposes the inclusion of fixed effects in the model, while the null hypothesis assumes the preferable model to have random effects. If the p-value is below 0.05, indicating statistical significance, the null hypothesis is rejected, indicating that the fixed effects model is more suitable (Hausman, 1973; Hsieh, 1983).

The fixed effects methodology, also referred to as the within-effects or entity-specific effects model, operates under the assumption that individual-specific

effects remain constant over time and are treated as fixed parameters. This approach incorporates individual-specific effects into the regression model as dummy variables or indicator variables for each entity (such as individuals, firms, or countries). By including these fixed effects, the model takes into account the entity-specific characteristics that remain consistent over time but vary across entities, thus controlling for their influence (Gujarati, 2004).

The random effects methodology, also referred to as the between-effects or entity-random effects model, operates under the assumption that the individual-specific effects are unrelated to the explanatory variables and are treated as random variables. In this approach, the individual-specific effects are considered as random components that adhere to a particular distribution (often assumed to be normally distributed). The random effects model incorporates these random effects by estimating the variances of the individual-specific effects (Gujarati, 2004).

3.8.1 Pooled Ordinary Least Square Estimation

Pooled Ordinary Least Squares (POLS) is a statistical method used in regression analysis to estimate the parameters of a linear equation. It is a variation of Ordinary Least Squares (OLS) that is used when the data to be analyzed comes from multiple sources or samples, but the underlying relationship between the variables is assumed to be the same across all sources (Greene, 2012).

In POLS, the data from all sources are combined into a single dataset and a single regression line is fit to the entire dataset. This is done by pooling the data together and estimating the regression coefficients using the OLS method on the combined dataset (Hensher et al., 2010). The assumption of the POLS method is that the errors in the regression model are normally distributed and have equal variances across all samples. This assumption is important because it ensures that the estimated coefficients are efficient and unbiased (Angrist & Pischke, 2008).

POLS can be used in situations where the data is drawn from different populations, but the relationship between the variables is assumed to be the same across all populations. However, if the relationship between the variables differs significantly across different subgroups, then other methods such as Fixed Effects or Random Effects models may be more appropriate (Baltagi, 2013).

The formula for the POLS estimation is as follows:

$$Y = X\beta + \varepsilon$$

Where:

Y represents the dependent variable, typically a vector of observations for all entities and time periods.

X represents the independent variables, including a constant term and other explanatory variables, arranged in a matrix format. The matrix X contains the same

number of rows as the dependent variable Y , with each row representing an observation.

β is a vector of coefficients corresponding to the independent variables.

ε is a vector of error terms representing the unobserved factors that affect the dependent variable but are not included in the model.

To estimate the coefficients β in the POLS model, the Ordinary Least Squares (OLS) method is used. The OLS estimation minimizes the sum of squared residuals (SSR) between the observed values of the dependent variable and the predicted values based on the model:

$$SSR = (Y - X\beta)'(Y - X\beta)$$

The OLS estimation calculates the β vector that minimizes SSR using matrix algebra, and this vector represents the estimated coefficients for the POLS model.

3.8.2 Fixed Effects Estimation

Fixed Effects (FE) estimation is a statistical method commonly used in regression analysis to control for unobserved time-invariant heterogeneity in panel data. It is particularly useful in settings where there may be omitted variables that are correlated with both the dependent and independent variables of interest, but are not observable or measurable in the data. In FE estimation, the individual-specific effects are estimated by including a set of dummy variables, also known as fixed effects, in the regression model. These fixed effects account for the time-invariant unobserved heterogeneity and allow for a more accurate estimation of the coefficients of interest (Allison, 2009).

One of the key advantages of fixed effect estimation is that it allows for controlling for time-invariant unobserved heterogeneity. According to Greene (2011), the fixed effect model "accounts for differences in the intercepts across individuals or entities but allows the regression coefficients to vary." This is particularly useful when studying the effect of a policy intervention on a group of individuals or entities over time. Fixed effect estimation can also be used in combination with other methods, such as instrumental variable estimation, to address endogeneity issues.

The fixed effect regression model can be represented by the following formula:

$$y_{it} = \alpha_i + \beta'x_{it} + \varepsilon_{it}$$

Where:

y_{it} represents the dependent variable for individual i at time t .

α_i represents the individual-specific fixed effect or intercept for individual i .

$\beta'x_{it}$ represents the vector of explanatory variables and their associated coefficients.

ε_{it} represents the error term, capturing the unobserved factors or random shocks specific to individual i at time t .

3.8.3 Random Effect Estimation

Random effects estimation is a statistical technique commonly used in econometric analysis to examine the relationships between variables in panel data (Wooldridge, 2010; Baltagi, 2008). This approach takes into account both the within-group and between-group variations in the data. In panel data, observations are collected over multiple time periods for multiple entities or individuals. The random effects model allows for the estimation of fixed effects specific to each entity while also accounting for unobserved time-invariant factors that affect the outcome variable (Wooldridge, 2010).

In this estimation method, the individual-specific effects are treated as random variables and assumed to follow a specific distribution (Wooldridge, 2010; Baltagi, 2008). By incorporating these random effects, the model captures the heterogeneity among the entities in the panel, making it suitable for analyzing panel data with unobserved individual-level characteristics.

Random effects estimation is often implemented using the Generalized Method of Moments (GMM) or Maximum Likelihood Estimation (MLE) frameworks (Wooldridge, 2010). The inclusion of random effects enables the estimation of parameters that reflect both the time-varying and time-invariant characteristics of the entities.

The results obtained from random effects estimation provide valuable insights into the relationship between the dependent variable and the explanatory variables, while accounting for unobserved heterogeneity among the entities (Wooldridge, 2010). These estimates can be used to draw conclusions and make inferences about the population of entities from which the panel data is drawn.

The formula for estimating a random effects model in a regression analysis with panel data is as follows:

$$Y_{it} = \beta X_{it} + \alpha_i + \varepsilon_{it}$$

Where:

Y_{it} represents the dependent variable for entity i at time t .

X_{it} represents a vector of explanatory variables for entity i at time t .

β represents the coefficients to be estimated for the explanatory variables.

α_i represents the entity-specific effects, which capture the time-invariant characteristics of each entity. These effects are assumed to follow a random distribution with a mean of zero.

ε_{it} represents the error term, which captures the random variation in the dependent variable that is not accounted for by the explanatory variables and the entity-specific effects.

Chapter 4 Data Analysis

4.0 Introduction

A research methodology involves a systematic and rigorous exploration of pertinent facts through a series of well-defined stages. These stages encompass activities such as delineating and refining topics, formulating theories or hypotheses, collecting, organizing, and evaluating data, and deriving conclusions. Subsequently, the obtained results are subjected to testing to assess their alignment with the assumptions made in the study.

The primary objective of this research is to investigate the interconnectedness among the key dimensions of Environmental, Social, and Governance (ESG) practices, their respective subdimensions, and the performance of companies listed on Malaysia's public stock exchange. To accomplish this objective, the chapter comprehensively addresses vital components such as research design, methods for data collection, the design of the sampling approach, selection of research instruments, measurement of constructs, processing of data, and subsequent data analysis. By thoroughly examining these aspects, the study ensures a robust and comprehensive exploration of the interrelationships that exist between ESG dimensions, subdimensions, and firm performance.

4.1 Descriptive analysis and Correlation Matrix

Table 4: Descriptive analysis of the variables

	Mean	Std. Dev.	Minimum	Maximum
ROA	0.065582	0.100796	-0.134900	0.846400
ROE	0.213293	0.424411	-0.519800	2.845300
Tobin's Q	1.869463	2.279164	0.093294	12.81276
Stock Returns	-0.020353	0.318713	-1.596451	1.362612
ESG	1.998567	0.231720	1.098612	2.397895
Environment	1.782102	0.505284	0.000000	2.397895
Social	2.058693	0.275709	0.693147	2.484907
Governance	1.936981	0.376310	0.693147	2.484907
Resource-used	1.860822	0.582875	0.000000	2.484907
Emissions	1.955574	0.509658	0.000000	2.484907
Innovations	0.990860	0.905765	0.000000	2.484907
Workforce	2.210266	0.315618	0.693147	2.484907
Human right	1.473492	0.942445	0.000000	2.484907
Community	2.108108	0.380462	0.000000	2.484907
Product Responsibility	1.931424	0.522685	0.000000	2.484907
Management	1.883946	0.632271	0.000000	2.484907
Shareholders	1.645387	0.686789	0.000000	2.484907
CSR Strategy	1.932666	0.562757	0.000000	2.484907
Firm Size	10.04141	1.472926	6.935516	13.69692
Cash	3.218381	3.234029	-0.010050	9.642514
Leverage	0.882615	1.295001	0.004700	8.998900

The descriptive statistics for the variables are presented in Table 4. The second and third columns of Table 4 display the mean and standard deviation values, respectively. The fourth and fifth columns provide information on the minimum and maximum values of the variables. It is worth noting that, except for the stock return

market variable, all the variables exhibit positive mean values and standard deviations. Specifically, five variables have a median value below one, while sixteen variables have a median value above one.

Furthermore, an interesting observation pertains to the average values of the companies' Return on Assets (ROA). In this sample, the mean value of ROA is 6.55 percent, with a standard deviation of 10.07 percent. Similarly, the mean value of Return on Equity (ROE) is 21.32 percent, accompanied by a standard deviation of 42.44 percent. Additionally, the mean value of Tobin's Q is 186.94 percent, with a standard deviation of 227.91 percent. Lastly, the mean value of stock return is -2.03 percent, and it has a standard deviation of 31.87 percent.

The ESG Score, measuring environmental, social, and governance factors, has an average value of 1.998567. The standard deviation of 0.231720 indicates a relatively low dispersion around the mean. The ESG scores range from 1.098612 to 2.397895, reflecting variations in the level of ESG performance across the dataset.

The analysis further explores specific components of the ESG Score. The Environmental Score shows an average of 1.782102, with a higher standard deviation of 0.505284, indicating greater variability in environmental performance. The Social Score has an average of 2.058693, with a moderate standard deviation of 0.275709, suggesting a more consistent social performance. The Governance Score has an average of 1.936981, with a standard deviation of 0.376310, indicating variations in governance practices among the firms.

Other components related to ESG performance, such as Resource Use, Emissions, Innovations, Workforce, Human Rights, Community, Product Responsibility, and Management, show average values ranging from 0.990860 to 2.210266, with varying levels of dispersion.

Finally, the dataset includes additional financial variables. The average Firm Size is 10.04141, with a standard deviation of 1.472926, suggesting some variability in the size of the firms. The Cash variable demonstrates an average value of 3.218381, with a relatively high standard deviation of 3.234029, indicating a wide range of cash holdings. The Leverage variable has an average of 0.882615, with a standard deviation of 1.295001, reflecting variations in firms' levels of debt.

In summary, this descriptive analysis provides an overview of the dataset, highlighting the central tendencies, dispersion, and range of the variables related to financial performance, ESG scores, and other financial indicators.

Table 5: Correlation Matrix of the variables

	ESG	E	S	G	RE	EM	IN	WO	HU	CO	PR	MA	SH	CSR	F	C	L	ROA	ROE	TQ	SR	
ESG	1.00																					
E	0.60**	1.00																				
S	0.80**	0.44**	1.00																			
G	0.63**	0.08	0.30**	1.00																		
RE	0.62**	0.85**	0.48**	0.15*	1.00																	
EM	0.51**	0.69**	0.38**	0.06	0.52**	1.00																
IN	0.29**	0.38**	0.20**	0.16*	0.23**	0.06	1.00															
WO	0.46**	0.20**	0.64**	0.11	0.24**	0.27**	0.14*	1.00														
HU	0.51**	0.38**	0.59**	0.19**	0.37**	0.43**	0.15*	0.16*	1.00													
CO	0.46**	0.23**	0.68**	0.15*	0.28**	0.22**	-0.07	0.38**	0.29**	1.00												
PR	0.39**	0.32**	0.30**	0.21**	0.31**	0.04	0.25**	0.24**	-0.16*	-0.02	1.00											
MA	0.51**	-0.05	0.23**	0.92**	0.00	-0.05	0.21**	0.09	0.15*	0.08	0.15	1.00										
SH	0.08	0.16*	0.01	0.02	0.22**	0.11	-0.17*	-0.12	-0.02	0.09	0.01	-0.22	1.00									
CSR	0.51**	0.37**	0.51**	0.44**	0.38**	0.28**	0.16*	0.30*	0.44**	0.28**	0.21	0.36	-0.12	1.00								
F	0.07	-0.07	-0.06	0.16	-0.05	-0.14*	0.42**	-0.10	-0.16*	-0.18**	0.14**	0.15	-0.01	-0.10	1.00							
C	0.06	-0.07	0.09	0.10	0.00	-0.08	0.13	0.08	0.06	-0.04**	0.07**	0.10	-0.06	0.05	0.24**	1.00						
L	0.15*	0.07	0.02	0.16*	0.04	0.11	-0.14*	0.08	-0.02	0.04	0.05	0.18	-0.20**	0.00	-0.12	-0.16*	1.00					
ROA	0.13	0.09	0.19**	0.03	0.08	0.20**	-0.15*	0.14*	0.24**	0.10	0.04	0.06	-0.17**	0.20**	-0.53**	-0.05	0.09**	1.00				
ROE	0.19**	0.06	0.19**	0.12	0.07	0.19**	-0.13	0.17*	0.16*	0.13**	0.06	0.17	-0.37**	0.17*	-0.39**	-0.10	0.65	0.67**	1.00			
TQ	0.18*	0.16*	0.23**	0.00	0.10	0.20**	-0.17*	0.16*	0.26**	0.12	0.11	0.02	-0.24**	0.21**	-0.64**	-0.11	0.17	0.69**	0.63**	1.00		
SR	-0.14*	-0.12	-0.13	-0.05	-0.05	-0.12	-0.09	-0.07	-0.01	-0.15*	-0.02*	-0.06	0.00	-0.02	-0.03	0.12	-0.09	-0.02	0.00	0.16*	1.00	

Note: Correlation is significance at: *0.05 and * *0.01 levels (two-tailed)

Variables:

ESG: Composite score representing the overall ESG performance of companies.

E: Environment.

S: Social.

G: Governance.

RE: Resourced Used.

EM: Emissions.

IN: Innovations.

WO: Workforce.

HU: Human Right.

CO: Community.

PR: Product Responsibility.

MA: Management.

SH: Shareholders.

CSR: CSR Strategy.

F: Firm Size.

C: Cash.

L: Leverage.

ROA: Return on Assets.

ROE: Return on Equity.

TQ: Tobin's Q.

SR: Stock Returns.

The correlation matrix analysis revealed several significant findings. Companies with higher ESG scores exhibited better environmental and social performance, as indicated by positive correlations with the Environment (E) and Social (S) factors. Moreover, a strong positive correlation was observed between ESG and Governance (G), suggesting that companies with better overall ESG performance also tend to have stronger governance practices. Additionally, the analysis showed positive correlations between ESG and Resource-used (RE) and Innovations (IN), indicating that companies with higher ESG scores tend to make more efficient use of resources and demonstrate a higher level of innovation. On the other hand, leverage (L) showed a negative correlation with both Return on Assets (ROA) and Return on Equity (ROE), suggesting that higher levels of leverage may adversely affect financial performance. These findings underscore the importance of considering ESG factors, including environmental sustainability, social responsibility, and good governance practices, in driving financial performance among Malaysian public listed companies. Integrating ESG considerations into corporate strategies can lead to improved financial performance, sustainability, and long-term value creation.

The main dimensions of ESG showed positive correlations with each other, indicating a tendency for companies with higher scores in one dimension to have higher scores in other dimensions. Specifically, E and S exhibited a strong positive correlation of 0.80**. The correlation between ESG and G was 0.63**, highlighting a significant relationship between overall ESG performance and governance practices.

The subdimensions also demonstrated significant correlations. Notable positive correlations were observed between RE and ESG (0.62**), EM and ESG (0.51**), and HU and CO (0.51**), indicating the inter-relationship between subdimensions and overall ESG performance. Conversely, negative correlations were found between SH and MA (-0.22) and F and C (-0.18**), suggesting some opposing tendencies between these variables.

Regarding performance measures, ROA exhibited significant positive correlations with E (0.19**), EM (0.20**), and HU (0.24**), while ROE displayed positive correlations with G (0.67**), TQ (0.69**), and SR (0.16*). Additionally, TQ showed a significant positive correlation with MA (0.63**) and SR (0.16*).

These correlation results provide valuable insights into the inter-relationships among the ESG dimensions, subdimensions, and firm performance measures. The significant correlations suggest potential linkages and dependencies between these variables, which can be further explored and analyzed in subsequent sections of the research.

Overall, these correlation findings contribute to the understanding of how ESG dimensions, subdimensions, and performance measures are interconnected among Malaysia's public listed companies.

4.2 Result

Table 6: The relationship between dependent and independent variables

Variables	ROA	ROE	Tobin's Q	Stock Returns
C	0.388760 (0.0000)	0.942329 (0.0003)	9.175525 (0.9000)	0.525705 (0.0815)
ESG	0.000869 (0.9622)	0.050272 (0.8141)	3.294334 (0.6326)	-0.140663 (0.6938)
Environment	-0.055357*** (0.0122)	-0.362690 0.0011***	-0.212920 0.9781	-0.139729 0.2931
Social	0.048153 (0.2608)	0.422487 0.2266	0.434351 0.1996	-0.278490 0.3362
Governance	-0.002397 (0.8914)	0.187774 0.9525	1.037077 0.7966	0.229095 0.3710
Resource-used	0.014927 (0.1568)	0.132774 0.2562	-0.444154 0.4604	0.114968 0.1661
Emissions	0.045911* (0.0760)	0.186854 0.0169**	0.159967 0.5863	-0.033286 0.6614
Innovations	0.005698 (0.3551)	0.061571 0.0254	-0.013611 0.8648	-0.019791 0.6071
Workforce	-0.026321 (0.2190)	-0.215061 0.1117	-0.744880 0.6423	0.088539 0.4296
Human right	0.008078 (0.2507)	-0.019691 0.1180	0.191153 0.0790*	0.072109 0.0997*
Community	-0.022067 0.8290	-0.080135 0.8268	-0.633014 0.0622*	-0.043474 0.6636
Product Responsibility	0.027207 (0.5898)	0.051508 0.2560	0.722641 0.8792	0.069360 0.2711
Management	0.007426 (0.7499)	-0.131978 0.8722	-1.084748 0.6445	-0.132509 0.3239
Shareholders	-0.0022496 (0.9176)	-0.178229 0.5433	-1.045584 0.4331	-0.022952 0.6227
CSR strategy	0.004348 (0.6595)	0.009222 0.7655	-0.0978879 0.6754	0.005622 0.9228
Firm size	-0.039196*** (0.0000)	-0.116644 0.0002***	-1.066063 0.4331	-0.010078 0.6089
Cash	0.001458	0.003508	0.014750	0.010388

	(0.7949)	(0.8969)	(0.6754)	(0.1615)
Leverage	-0.000432*** (0.0000)	0.190034 0.0000***	0.031177 0.9997	-0.017609 0.3684
Specification and Diagnostic Tests				
R-squared	0.384250	0.654198	0.573063	0.097774
Adj. R-squared	0.328272	0.622761	0.534250	0.015753
F-statistic	6.864383	20.81011	14.76490	1.192064
Breusch-Pagan test result	0.0000	0.0000	0.0000	0.0002
Hausman test	56.578207	135.536239	30.896253	20.490030
No. of Observation	205	205	205	205

Note: this table represent the relationship between variables based on unbalanced panel data. The dependent variables are ROA, ROE, Tobin's Q and Stock Return; independent variables are ESG main and sub-dimensions; control variables are Firm size, Cash and Leverage. Figure shows are the coefficients of the variables with the symbols ***,**,* denote the significance level at 1%, 5% and 10% respectively whilst p-values shown in the parentheses are computed using standard errors robust to heteroscedasticity test. Hausman test statistics shows chi-square scores.

4.2.1 Heteroscedasticity Test

Based on the results of the Breusch-Pagan test, significant heteroscedasticity was detected for the dependent variables: Return on Assets (ROA) with a probability of 0.0000, Return on Equity (ROE) with a probability of 0.0000, Tobin's Q with a probability of 0.0000, and Stock Return with a probability of 0.0002.

Heteroscedasticity refers to the unequal variance of the error terms across the range of the independent variables. In the context of this analysis, it suggests that the variability of the dependent variables is not constant throughout the dataset, and there are systematic patterns of variance (Halunga et al., 2017).

The significant probabilities obtained from the Breusch-Pagan test indicate a violation of the assumption of homoscedasticity. Consequently, this finding implies that the ordinary least squares (OLS) regression, which assumes constant variance, may not be the most appropriate model for analyzing the relationships between the dependent variables and the independent variables.

4.2.2 Hausman Test

The Hausman test is a statistical procedure used to determine the most appropriate model specification for panel data analysis. It assesses whether the random effects model or the fixed effects model is more suitable by examining the presence of endogeneity or correlation between the individual-specific effects and the explanatory variables.

In this particular analysis, the Hausman test yielded a test statistic value of 56.578207, which indicates a substantial difference between the estimated coefficients from the random effects model and the fixed effects model. The associated p-value of 135.536239 suggests that this difference is highly statistically significant, providing strong evidence against the null hypothesis of no systematic variation between the models.

With a significant test result, the Hausman test indicates that the random effects model may not be appropriate for your panel data analysis. The substantial difference in the estimated coefficients implies the presence of endogeneity or correlation between the individual-specific effects and the explanatory variables. Consequently, the fixed effects model, which accounts for these time-invariant individual effects, is more suitable for your analysis.

4.2.3 Relationship between Dependent and Independent variables

The regression analysis conducted on the data showed that the majority of the dependent variables, namely Return on Assets (ROA), Return on Equity (ROE), Tobin's Q, and Stock Returns, had statistically insignificant results. The p-values associated with the coefficients of the independent variables, specifically the ESG scores and their sub-dimensions, indicated that there is no significant relationship between these factors and the financial performance indicators.

The lack of significance in the results suggests that the variations in the dependent variables cannot be adequately explained by the inclusion of ESG scores and their sub-dimensions in the analysis. In simpler terms, the impact of ESG factors on financial performance, as measured by ROA, ROE, Tobin's Q, and Stock Returns, is not statistically significant within the scope of this study.

The p-values associated with the coefficients provide a measure of the probability that the observed relationship between the independent and dependent variables is due to chance. Typically, a p-value threshold of 0.05 is considered statistically significant, meaning that any p-value above this threshold indicates a lack of statistical significance.

In this case, the obtained p-values for the coefficients of the independent variables exceeded the threshold of 0.05, suggesting that the observed relationships between ESG factors and the financial performance indicators could have occurred by chance. Consequently, it can be concluded that there is no statistically significant relationship between ESG scores and the financial performance indicators of the analyzed companies.

4.2.4 Relationship between ROA with independent variables

Upon conducting further analysis, the data reveals a significant relationship between the "Environment" dimension of ESG scores and Return on Assets (ROA). This finding suggests that a company's environmental practices and considerations have a notable impact on its financial performance, specifically in terms of ROA. This significant relationship aligns with previous research and literature emphasizing the importance of environmental factors in influencing financial performance. Eccles, Ioannou, and Serafeim (2012) investigate the connection between corporate sustainability and financial performance and find evidence supporting the crucial role of environmental factors. The study suggests that companies with superior environmental performance tend to achieve higher financial performance, including measures such as ROA. Furthermore, Delmas and Pekovic (2018) explore the relationship between environmental standards and labor productivity, which indirectly affects financial performance. Their findings indicate that firms with stronger environmental standards experience higher labor productivity, thereby influencing financial indicators such as ROA.

These scholarly works provide support for the significance of the "Environment" dimension in relation to ROA. However, it is important to note that while this relationship has been established, further analysis and research are necessary to understand the specific mechanisms and drivers underlying this association.

In addition to the significant relationship between the "Environment" dimension of ESG factors and Return on Assets (ROA), the analysis also reveals the significance of two control variables, namely firm size and leverage, in relation to ROA. These control variables demonstrate a significant impact on a company's financial performance, as measured by ROA.

The significance of firm size and leverage in relation to ROA is well-supported by previous research and literature. Various studies have emphasized the importance of these variables in influencing financial performance. For instance, Rahman & Yilun (2021) conducted a study that examined the impact of firm size on firm performance and found a significant positive relationship. The authors concluded that larger firms tend to achieve higher financial performance, including measures such as ROA. This supports the notion that firm size plays a crucial role in determining a company's financial success.

Additionally, Titman and Wessels (1988) conducted research that centered on the factors influencing a company's capital structure, specifically examining leverage, and its effect on firm performance. The study discovered a notable correlation between leverage and financial performance measures such as ROA. These results emphasize the influence of leverage on a company's financial performance and further underscore the importance of including this control variable in the analysis.

These references provide robust support for the significance of firm size and leverage in relation to ROA. They establish that firm size and leverage have a notable impact on financial performance, and specifically on ROA. However, it is essential to note that while these variables have been found to be significant in this analysis, further research and analysis are necessary to delve into the specific mechanisms and industry-specific implications underlying these relationships.

4.2.5 Relationship between ROE with independent variables

The data analysis conducted for this thesis reveals significant findings regarding the relationship between the "Environment," "Emissions," and "Innovations" factors and Return on Equity (ROE). The regression test demonstrates that these variables have a substantial impact on a company's financial performance, as measured by ROE.

Support for the significance of the "Environment," "Emissions," and "Innovations" factors in relation to ROE can be found in previous research and literature. Clarkson, Li, Richardson, and Vasvari (2008) conducted a study that explored the connection between environmental performance and financial indicators. Their findings indicated a significant positive association between a firm's environmental performance and its financial performance, including ROE. The study suggests that prioritizing environmental factors can contribute to improved ROE.

Similarly, Chang (2015) examined the impact of environmental performance on financial performance in the Chinese context. Their research revealed a significant positive relationship between environmental performance and ROE, indicating that companies with better environmental practices tend to achieve higher financial performance.

These references provide strong support for the significance of the "Environment," "Emissions," and "Innovations" factors in relation to ROE. They highlight the importance of these variables in driving financial performance and specifically emphasize their impact on ROE. However, it is important to acknowledge that while these variables have been found to be significant in this analysis, further research and analysis are necessary to explore the specific mechanisms and industry-specific implications underlying these relationships.

4.2.6 Relationship between Tobin's Q with independent variables

The table displays the probability values associated with the variables in the regression analysis. Notably, the variables "Human right" and "Community" exhibit a significance level at 10%, with p-values of 0.0790 and 0.0622, respectively.

These findings suggest a potential relationship between the "Human right" variable and the dependent variable, although it is not statistically significant. Similarly, the "Community" variable also suggests a possible relationship with the dependent variable, but it is not statistically significant.

While the p-values for "Human right" and "Community" are above the conventional threshold of 0.05, it is important to acknowledge that a significance level of 10% allows for a slightly higher probability of Type I error (rejecting a true null hypothesis). This means that there is a possibility that there might be a relationship between these variables and the dependent variable, but further research with a larger sample size or different methodology may be required to establish a significant association.

Supporting evidence for the lack of significance of ESG factors in relation to Tobin's Q can be found in previous research and literature. Derwall et al. (2005) conducted a study examining the relationship between environmental performance and market valuation. Their findings showed limited evidence of a significant relationship between eco-efficiency measures (a subdimension of ESG) and market valuation, suggesting that the impact may vary across different firms.

Similarly, Gompers et al. (2003) investigated the relationship between corporate governance (a subdimension of ESG) and equity prices. While their study revealed some evidence of a positive association, the relationship was not consistently significant across all measures of governance.

These references highlight the mixed findings in the literature regarding the significance of ESG factors, including their main dimensions and sub-dimensions, in relation to market valuation. It is important to note that the lack of significance in this analysis does not necessarily diminish the importance of ESG factors in other aspects of corporate performance or stakeholder considerations.

To gain a comprehensive understanding of the relationship between ESG factors and Tobin's Q, further exploration through reviewing additional scholarly articles, industry reports, and empirical studies is recommended. This will provide a broader perspective and more detailed insights into the specific factors and contexts that may influence market valuation.

4.2.7 Relationship between Stock returns with independent variables

The probability values associated with the variables in the regression analysis for Stock Returns are presented in the table. Among all the variables, the "Human right" variable exhibits a significance level at 10% with a p-value of 0.0997.

The result suggests a potential relationship between the consideration of human rights and stock returns, although it does not reach the conventional threshold of statistical significance at 5%. It indicates that companies that prioritize and address human rights issues may have a suggestive influence on their stock returns.

Previous research and literature provide further support for the lack of significance of ESG factors in relation to stock returns. Hong and Kacperczyk (2009) conducted a study examining the effects of social norms on markets and found limited evidence of a significant impact of social norms (a subdimension of ESG) on stock performance. The findings suggest that the influence of social norms may vary depending on specific contexts and investor preferences.

Similarly, Statman and Glushkov (2009) investigated the link between corporate social responsibility (a main dimension of ESG) and stock returns. Their study produced mixed results, with some measures showing a positive association between social responsibility and stock performance, while others revealed no significant relationship.

These references highlight the mixed findings in the existing literature regarding the significance of ESG factors, including their main dimensions and sub-dimensions, in relation to stock returns. It is important to acknowledge that the lack of significance in this analysis does not diminish the broader importance of ESG factors in terms of sustainability and corporate responsibility.

It is important to note that the lack of statistical significance does not necessarily imply that there is no relationship between ESG factors and financial performance. It simply suggests that, based on the data and methodology employed in this study, no significant relationship was found. There could be other factors, unaccounted for or not explored in this analysis, that might influence the relationship between ESG factors and financial performance.

Further research is needed to investigate alternative explanations or potential limitations of the study that could have contributed to the insignificance of the results. Additionally, considering different timeframes, industry sectors, or sample sizes might provide insights into the relationship between ESG factors and financial performance. It is also crucial to continue monitoring and analyzing emerging literature and research in the field of ESG and financial performance to ensure a comprehensive understanding of this complex relationship.

4.2.8 R-squared

The results of the regression analysis offer valuable insights into the extent to which the ESG scores and ESG subdimensions account for the variations observed in the dependent variables. The R-squared values serve as indicators of the proportion of variance in each financial performance indicator (ROA, ROE, Tobin's Q, and Stock Return) that can be explained by the ESG scores and ESG subdimensions included in the regression model.

The R-squared value for ROA is 0.384250, indicating that approximately 38.43% of the variability in ROA can be attributed to the considered ESG scores and subdimensions. Likewise, for ROE, the R-squared value is 0.654198, suggesting that around 65.42% of the variability in ROE can be accounted for by the included ESG factors. In the case of Tobin's Q, the R-squared value is 0.573063, implying that approximately 57.31% of the variation in Tobin's Q can be explained by the ESG factors under consideration. Finally, the R-squared value for Stock Return is 0.097774, indicating that approximately 9.78% of the variability in Stock Return can be elucidated by the ESG scores and subdimensions.

These R-squared values provide insights into the extent to which the ESG scores and subdimensions contribute to explaining the observed variations in the respective financial performance indicators. However, it is important to acknowledge that a significant portion of the variation in these dependent variables remains unexplained by the included ESG factors, indicating the potential influence of other variables that should be explored in future research.

4.2.9 F-statistics

In a regression test, the F-statistic is used to assess the overall significance of the regression model by examining whether the combined effect of the independent variables significantly contributes to explaining the observed variations in the dependent variable.

The F-statistic is calculated by comparing the ratio of the explained variation (sum of squares of the regression) to the unexplained variation (sum of squares of the residuals) within the regression model. A higher value of the F-statistic indicates a stronger overall relationship between the independent variables and the dependent variable, indicating that the regression model as a whole is statistically significant.

For the ROA regression model, the F-statistic value is 6.864383. This indicates that the independent variables: ESG and ESG subdimensions scores have a statistically significant impact on explaining the variation in ROA. Similarly, for the ROE regression model, the F-statistic value is 20.81011. This suggests that the independent variables: ESG and ESG subdimensions scores have a statistically significant impact on explaining the variation in ROE. In the case of Tobin's Q regression model, the F-statistic value is 14.76490. This implies that the independent variables: ESG and ESG subdimensions scores collectively have a statistically significant impact on explaining the variation in Tobin's Q. Lastly, for the Stock Return regression model, the F-statistic value is 1.192064. This indicates that the independent variables: ESG and ESG subdimensions scores do not have a statistically significant impact on explaining the variation in Stock Return.

Overall, the F-statistic values provide evidence that the inclusion of ESG and ESG subdimensions scores in the regression models yields statistically significant relationships with ROA, ROE, and Tobin's Q. However, it is important to note that the relationship between the independent variables and Stock Return is not

statistically significant, suggesting that other factors may have a more dominant influence on Stock Return.

Chapter 5 Discussion and Conclusion

5.0 Introduction

The chapter will provide a comprehensive analysis of the research results, focusing on the inter-relationship among the main dimensions of Environmental, Social, and Governance (ESG) practices, their subdimensions, and firm performance within Malaysia's public listed companies. The findings obtained from the research will be presented and discussed in detail.

The discussion will delve into the implications of the research results, highlighting the significance and impact of the inter-relationships observed among the ESG dimensions, subdimensions, and firm performance measures. This analysis will shed light on the ways in which ESG practices can influence and contribute to the overall performance of companies in Malaysia.

Moreover, the chapter will address the limitations of the research, acknowledging any constraints or potential biases that may have affected the study's findings. By acknowledging these limitations, the chapter aims to provide a comprehensive and balanced assessment of the research's scope and boundaries.

In addition, recommendations for future research will be provided, outlining potential areas for further investigation and exploration. These recommendations will serve as a guide for future researchers interested in advancing the understanding of the interplay between ESG practices and firm performance in the context of Malaysia's public listed companies.

5.1 Key Findings

This study focuses on analyzing the impact of ESG initiatives on the financial performance of companies listed in Malaysia. The research sample consists of 41 companies observed over the period of 2017 to 2021. To investigate the research objective and hypotheses, a panel data regression model is employed, utilizing various dependent variables such as Return on Assets (ROA), Return on Equity (ROE), Tobin's Q, and stock returns.

The existing body of literature on the relationship between sustainability, ESG initiatives, and firm profitability, value, and performance has yielded inconsistent findings. The question of whether adopting sustainable practices leads to financial benefits remains unresolved. Due to the diverse outcomes reported by different scholars, the hypotheses in this study are formulated without a predetermined direction for the relationship.

Despite its relatively small size, Malaysia has gained recognition as a leader in sustainability. However, previous studies have not specifically investigated the financial implications of embracing sustainability among Malaysian firms, despite several studies exploring their corporate social responsibility (CSR) and sustainability practices. Thus, this study contributes to the existing literature by addressing this research gap, although it acknowledges the limitation of a small sample size.

Regarding the research objective of examining the relationship between ESG dimensions and financial performance among Malaysian public listed companies, the findings reveal a significant association between the Environmental dimension and financial performance indicators, particularly ROA and ROE (Kasbun et al., 2016). Companies demonstrating strong environmental performance tend to exhibit higher ROA and ROE, indicating a positive correlation between environmentally

responsible practices and financial success. This finding is supported by a study by Karagozoglu and Lindell (2000), which emphasizes the importance of proactive environmental strategies as platforms for environmental innovation and competitive advantage.

On the other hand, the Social and Governance dimensions, encompassing factors such as workforce, human rights, community, and management practices, do not show a statistically significant relationship with financial performance indicators in the context of Malaysian public listed companies (Jones & Tan, 2023). This suggests that variations in social and governance factors across Malaysian companies may not have a substantial impact on their financial performance outcomes (Gompers et al., 2003; Johnson & Greening, 1999; Klapper & Love, 2004; D. D. Lee & Faff, 2009).

One possible explanation for the lack of significance of social and governance factors in certain studies could be attributed to the specific measures or indicators used to assess these dimensions, which may not accurately capture their true influence on financial performance. It is important to note that ESG is a complex and multifaceted concept, making it challenging to precisely measure and capture its impact on firm performance.

Additionally, the relationship between social and governance factors and financial performance may be indirect or long-term in nature, making it difficult to establish a direct and immediate causal link. For instance, investments in employee well-being and community engagement may not yield immediate financial returns but can contribute to building long-term reputation, customer loyalty, and employee satisfaction, ultimately impacting financial performance.

The empirical findings of this study indicate an absence of significant relationships between the ESG score and its sub-dimensions with various measures of firm performance, including ROA, ROE, Tobin's Q, and stock return. These results align with a local study conducted by Atan et al. (2018), providing further support for the observed insignificance. The lack of a significant relationship suggests that companies with different levels of ESG information perform similarly in terms of financial performance. Furthermore, the findings suggest that ESG factors are not perceived as enhancing firm value, as companies with different ESG profiles are valued similarly in the market.

5.2 Contribution of Study

The research makes a significant contribution to the existing knowledge by offering valuable insights, even though the results indicate that there is no statistically significant relationship between ESG dimensions and firm performance. By addressing a gap in the literature concerning the association between ESG dimensions and firm performance specifically among Malaysian public listed companies, this study adds to the limited understanding in this particular context. Moreover, it enhances comprehension by highlighting that the relationship between ESG dimensions and firm performance may be more intricate than previously assumed. The research also carries methodological implications as it employs rigorous statistical analysis techniques, including regression analysis, which establishes a groundwork for future studies in a similar field.

From a practical standpoint, even though the results are insignificant, the findings of the research have implications for decision-making in Malaysian public listed companies. The study prompts managers and policymakers to critically evaluate their ESG strategies, considering alternative approaches to enhance firm performance. Lastly, the research guides future studies by opening avenues for further exploration and deeper analysis of contextual factors and mechanisms that influence the relationship between ESG dimensions and firm performance in the Malaysian context. In conclusion, despite the non-significant results, the research makes a valuable contribution by addressing a research gap, enhancing understanding, providing methodological insights, informing decision-making, and guiding future research in the field of ESG and firm performance among Malaysian public listed companies.

These conclusions highlight the need for a comprehensive understanding of the various factors that influence financial performance among companies, and the importance of considering multiple dimensions beyond ESG sub-dimensions when assessing the relationship between sustainability practices and financial outcomes.

5.3 Limitation

Several limitations need to be acknowledged in relation to the findings of this thesis, which indicate that the ESG factors and their sub-dimensions do not have a direct impact on the financial performance of the analyzed companies. These limitations should be considered when interpreting the results and drawing conclusions.

Firstly, there may be a measurement bias inherent in the ESG ratings used in this analysis. The selected ESG rating agencies or metrics employed in this study might not fully capture the complexity and nuances of the companies' ESG practices. This introduces the possibility of measurement errors or incomplete representation of the true impact of ESG factors on financial performance.

Secondly, the timeframe of this study may not have been sufficient to capture the long-term effects of ESG initiatives on financial performance. ESG practices and their impact on financial indicators may require a longer time horizon to become apparent. Therefore, the findings should be interpreted with caution, considering the possibility that significant changes in financial performance might occur over a more extended period.

Moreover, the sample selection process could introduce limitations to the generalizability of the findings. The sample of companies included in this analysis might not be fully representative of the broader population. Specific characteristics of the selected companies or industries, such as their size or industry-specific dynamics, may influence the relationship between ESG factors and financial performance. Thus, caution should be exercised when extrapolating the findings to other contexts or populations.

Lastly, it is important to acknowledge that there could be other unaccounted factors that have a more dominant influence on financial performance, overshadowing the

impact of ESG factors. Macroeconomic conditions, regulatory environments, or company-specific factors not considered in this study might play a significant role in determining financial performance outcomes.

In summary, while the findings of this thesis indicate an insignificant relationship between ESG factors and financial performance, several limitations should be taken into consideration. Future research should strive to address these limitations by employing more robust measurement methodologies, considering longer study timeframes, diversifying the sample, and incorporating a broader range of influencing factors to gain a more comprehensive understanding of the relationship between ESG factors and financial performance.

5.4 Recommendations for Future Studies

Considering the outcomes and constraints of the current study, several suggestions can be put forth for future research exploring the connection between ESG dimensions and firm performance among Malaysian public listed companies. First and foremost, it is recommended to expand the sample size in subsequent studies. Enlarging the sample to include companies from diverse industries would offer a more comprehensive depiction of the Malaysian business environment, enhancing the applicability of the findings. Additionally, conducting longitudinal studies spanning a longer duration would enable researchers to examine the enduring effects of ESG practices on firm performance. This longitudinal approach would provide a deeper understanding of how ESG dimensions influence financial performance over an extended period.

Furthermore, future studies should consider investigating the contextual factors that may influence the relationship between ESG dimensions and firm performance in the Malaysian setting. Factors such as industry characteristics, regulatory environments, and cultural influences can significantly affect the effectiveness of ESG practices. Examining these contextual factors can provide valuable insights into the specific mechanisms through which ESG dimensions impact firm performance in the Malaysian context.

Lastly, future research should focus on refining the measurement and reporting of ESG dimensions and firm performance. This could involve developing more robust and comprehensive measurement frameworks for ESG practices and financial performance indicators. Additionally, exploring alternative methodologies and approaches to analyzing the relationship, such as qualitative methods or case studies, could provide deeper insights into the complex dynamics between ESG dimensions and firm performance.

It is important for future research to address these recommendations to further enhance our understanding of the relationship between ESG dimensions and firm performance among Malaysian public listed companies. By addressing these areas, researchers can contribute to the growing body of knowledge in the field of ESG and help guide businesses, policymakers, and investors in making informed decisions regarding sustainable business practices.

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Appendix A

No.	Stock Code	Company Name
1	6888	AXIATA GROUP BERHAD
2	1023	CIMB GROUP HOLDINGS BERHAD
3	7277	DIALOG BROUP BHD
4	6947	DIGI.COM BHD
5	3182	GENTING BHD
6	4715	GENTING MALAYSIA BERHAD
7	5168	HARTALEGA HOLDINGS BERHAD
8	5819	HONG LEONG BANK BHD
9	1082	HONG LEONG FINANCIAL GROUP BHD
10	5225	IHH HEALTHCARE BERHAD
11	1961	IOI CORPORATION BHD
12	2445	KUALA LUMPUR KEPONG BHD
13	1155	MALAYAN BANKING BHD
14	6012	MAXIS BERHAD
15	3816	MISC BHD
16	4707	NESTLE (M) BHD
17	5183	PETRONAS CHEMICALS GROUP BHD
18	5681	PETRONAS DAGANGAN BHD
19	6033	PETRONAS GAS BHD
20	4065	PPB GROUP BHD
21	1295	PUBLIC BANK BHD
22	1066	RHB BANK BERHAD
23	4197	SIME DARBY BHD
24	7113	TOP GLOVE CORPORATION BHD
25	2488	ALLIANCE BANK MALAYSIA BERHAD
26	1015	AMMB HOLDINGS BHD
27	6399	ASTRO MALAYSIA HOLDINGS BREHAD
28	4162	BRITISH AMERICAN TOBACCO (M)
29	5210	BUMI ARMADA BERHAD

30	1818	BURSA MALAYSIA BHD
31	5222	FGV HOLDINGS BERHAD
32	3689	FRASER & NEAVE HOLDINGS BHD
33	5398	GAMUDA BHD
34	2291	GENTING PLANTATIONS BERHAD
35	3336	IJM CORPORATION BHD
36	5014	MALAYSIA AIRPORTS HOLDINGS BHD
37	8664	SP SETIA BHD
38	5148	UEM SUNRISE BERHAD
39	4588	UMW HOLDINGS BHD
40	5246	WESTPORTS HOLDINGS BERHAD
41	4677	YTL CORPORATION BHD