The Relationship between ESG and Corporate Financial Performance during the Covid-19 Crisis

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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.

(3) The word count of this research report is 18850.

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I would like to acknowledge my brother, for his constant support and understanding. His encouragement has been a significant source of motivation for me.

Finally, I would like to thank the creators of the Wi-Fi technology, for providing us with the tools to access knowledge and resources from anywhere, at any time.

Thank you all for your contributions to my work.

DEDICATION

I dedicate this thesis to several individuals who have been instrumental in my journey. First and foremost, I would like to dedicate this work to my supervisor, Dr Low Mei Peng, for her guidance, feedback, and support throughout my research. Her expertise and knowledge have been indispensable in shaping my ideas and improving the quality of my work.

I would also like to dedicate this thesis to myself, for the persistence, hard work, and determination I have shown in completing this project. This accomplishment represents a significant milestone in my academic journey, and I am proud of myself for persevering through the challenges.

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Finally, I would like to dedicate this thesis to the creators of Wi-Fi technology, for providing me with the tools to access knowledge and resources from anywhere, at any time. The convenience of this technology has been critical in enabling me to conduct my research efficiently and effectively.

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LIST OF ABBREVIATION

ANOVA	Analysis of Variance
COVID-19	Coronavirus disease
CSR	Corporate Social Responsibility
df	Degree of freedom
ESG	Environmental, Social, and Governance
N	Total number of individuals or cases in the population
R	Correlation coefficient
ROA	Return on Assets
R-squared/r2	Coefficient of determination
UK	United Kingdom
US	United State
sig	Significance value
SPSS	Statistical Package for Social Sciences
VIF	Variance inflation factor

ABSTRACT

This study aimed to investigate the relationship between ESG factors and financial performance of companies during the COVID-19 pandemic. The results of the study did not provide sufficient evidence to support the hypothesis that there is a positive relationship between ESG factors and financial performance. The statistical analysis showed that the correlations observed between ESG factors and financial performance were not statistically significant at the 0.05 level, indicating that the sample of companies studied does not demonstrate a clear and consistent relationship between these variables. The regression analysis also revealed that the ESG score was not a statistically significant predictor of ROA during any of the years (2019- 2022) analysed. These findings suggest that ESG scores may not be a significant predictor of financial performance for the given years, and the model's accuracy in predicting financial performance varied across years. The study's results provide insights into the limitations of the relationship between ESG and financial performance, which policymakers and investors must take into consideration. Further inquiry is required to gain a deeper understanding of the underlying causes for these disparities.

Chapter 1: Introduction

1.1 Research Background

ESG refers to the Environmental, Social, and Governance factors that companies consider when making business decisions (Eccles & Serafeim, 2013; Hawn, 2021; Grewal & Singh, 2020; Lauring, Frydendal, & Thomsen, 2019; Weber & Fernandez-Feijoo, 2019). ESG has become an increasingly important consideration for investors (Krüger & Schiereck, 2014; Eccles, Ioannou, & Serafeim, 2014; Kotsantonis & Kostakis, 2020; Yachnin & Szewczyk, 2019), because they seek to invest in companies that are not only profitable, but also socially and environmentally responsible (Eccles, Ioannou, & Serafeim, 2014; Grewal & Journeault, 2022; Kaspereit & Lopatta, 2020; Sun, Yu, Li, & Li, 2021; Velte & Stübinger, 2019).

In recent years, ESG practices have gained significant attention around the world, and companies that adopt strong ESG practices are more likely to perform better financially than those with weak ESG practices (Eccles & Serafeim, 2013; Friede, Busch, & Bassen, 2015; Khan, Nishat, & Hong, 2018). Many countries, such as the EU, Japan, and Australia, have implemented regulations and guidelines on ESG disclosure, making it a necessary requirement for companies to report their ESG practices (Brammer, Jackson, & Matten, 2012; Kaspereit & Lopatta, 2020; PwC, 2018). Moreover, some industries, such as the extractive and energy industries, face more ESG risks than others and are therefore subject to stricter ESG disclosure requirements (Zhang, Li, & Liang, 2020; Wei, Cai, & Liu, 2019).

For example, companies that adopt strong environmental practices are likely to be more efficient in their use of resources, leading to lower costs and higher profits

(Boiral & Gendron, 2018; Bouri, Jain, & Biswas, 2020; Cai, Wang, & Cao, 2018; Huhtala, Kallio, Kotro, Puttonen, & Rantala, 2019; Rana & Paul, 2017). In countries where there are strict regulations on greenhouse gas emissions, such as the EU and Japan, companies in the energy and transportation industries are required to report their emissions and adopt measures to reduce their carbon footprint (Wei, Cai, & Liu, 2019; Kaspereit & Lopatta, 2020). Companies that adopt strong social practices are likely to have better relationships with customers and employees, leading to increased loyalty and productivity (Husted & Allen, 2018; Kim & Moffat, 2018; Luo & Bhattacharya, 2018; Wang & Marquis, 2019; Xu, Wang, & Qian, 2019). In industries where the safety and welfare of employees are receiving significant attention, such as the construction and mining industries, companies are required to report on their safety measures and adopt practices that protect their employees (Zhang, Li, & Liang, 2020; Wei, Cai, & Liu, 2019). Companies that adopt strong governance practices are likely to be more transparent and accountable, reducing the risk of scandals or legal issues (Deakin & Singh, 2018; Harjoto, Laksmana, & Lee, 2019; Hawn & Ioannou, 2018; Hawn & Ioannou, 2020; Kim, Li, & Liang, 2021). In countries with strict regulations on corporate governance, such as the UK and the US, companies are required to disclose their board composition, executive pay, and other governance-related information (PwC, 2018; Brammer, Jackson, & Matten, 2012).

ESG reports are receiving increased attention from investors, and ESG factors are being regarded as a crucial factor in their investment decision-making process. An increasing number of investors are incorporating ESG criteria into their investment strategies, reflecting a growing trend in the investment industry. Consequently, firms that prioritize ESG factors have a higher probability of attracting investment and achieving sustainable financial success over the long run. (Eccles & Serafeim, 2013; Flammer, 2015; Kacperczyk & Hong, 2018; Khan, Serafeim, & Yoon, 2016; Orlitzky, Schmidt, & Rynes, 2016).

It is important to note that there is no universal measure for ESG, The correlation between ESG factors and financial performance is intricate and multifaceted. How ESG factors affect financial performance may vary depending on the specific ESG factor, as well as the industry and region in which a company operates (Grewal, Jha, & Yaylacı, 2019; Liu, Luo, & Shi, 2020; Lourenço & Branco, 2018; Mishra & Modi,

2019; Wang, Yu, & Liu, 2019). This study employs ESG ratings as the measure for evaluating a company's ESG factors. ESG ratings use various data sources, including company disclosures, media coverage, and stakeholder feedback, and are a widely used method for assessing a company's sustainability practices (Grewal, Jha, & Yaylacı, 2019; Mishra & Modi, 2019; Wang, Yu, & Liu, 2019; Bach, 2022; Le, Chen, & Wong, 2022). However, the link between ESG and financial performance remains complex and can be influenced by various factors, including the COVID-19 pandemic (Flammer & Luo, 2021).

Numerous companies are currently confronting unparalleled challenges as the global economy reels from the effects of the Covid-19 crisis (Giannakis & Haji-Ioannou, 2020; Fichter & Heinecke, 2021; Cavusgil, Knight, Riesenberger, Rammal, & Rose, 2021; Mitra & Sharma, 2021). Given the unprecedented challenges that companies are facing during the Covid-19 crisis, It is crucial to investigate whether ESG factors continue to have a noteworthy impact in corporate financial performance.

The aim of this research is to examine the impact of the Covid-19 crisis on how ESG factors impact corporate financial performance. By doing so, this research will provide valuable insights into whether companies that prioritize ESG are more resilient when facing the economic challenges caused by the pandemic. This topic is of great importance to investors, companies, and policymakers, and this study will add significant value to the growing amount of academic research that investigates the correlation between ESG factors and corporate financial performance.

1.2 Research Problem

The emergence of environmental, social, and governance (ESG) factors as critical drivers of corporate financial performance has been a significant trend in recent years. Increasingly, investors and other stakeholders are recognising the importance of ESG factors in assessing a company's long-term sustainability and risk profile.

However, the COVID-19 pandemic has disrupted global economies and markets, creating unprecedented challenges and uncertainties for businesses worldwide.

In this context, it is essential to investigate whether ESG considerations continue to play a significant role in determining corporate financial performance during the crisis. This study aims to provide a comprehensive analysis of the relationship between ESG factors and financial performance across different industries and regions, taking into account the impact of the pandemic on this relationship.

The COVID-19 pandemic has had a profound impact on businesses of all sizes and sectors, and its effects are likely to be felt for years to come. As such, it is essential to understand how ESG factors can help companies navigate these challenging times and emerge stronger and more resilient. By examining the impact of the pandemic on the ESG-financial performance relationship, this study will provide valuable insights into the role of sustainability in times of crisis.

The findings of this research will have significant implications for businesses, investors, and policymakers. They will help companies understand how to incorporate ESG considerations into their risk management and strategy development processes, as well as how to communicate their ESG performance effectively to stakeholders. For investors, the study will provide insights into how to assess the ESG performance of companies in the current crisis and beyond, while policymakers can use the findings to inform policies and regulations aimed at promoting sustainable business practices.

Overall, this research project aims to shed light on the relevance of ESG factors in shaping financial outcomes for businesses amidst a global crisis. By examining the impact of the pandemic on this relationship, the research will provide valuable insights into how businesses can navigate the challenges of sustainability and financial performance in a rapidly changing global environment.

1.3 Review of Past Studies & Deficiency of Past Studies

Environmental, social, and governance (ESG) factors have gained significant attention in recent years as investors increasingly prioritize sustainability and

ethical considerations in their decision-making. While a growing body of research has examined the relationship between ESG factors and financial performance, there remain gaps in the literature regarding the specific mechanisms through which these factors impact firms' financial outcomes.

For example, a recent study by Sun et al. (2021) explored the impact of ESG factors on corporate risk-taking behavior and found that firms with higher ESG scores exhibited lower levels of risk-taking. However, the authors note that the relationship between ESG factors and risk-taking may be context-specific and that further research is needed to understand the nuances of this relationship across different industries and regions.

Similarly, a study by Adegbite et al. (2020) examined the role of ESG factors in shaping corporate governance practices in evolving economies. The authors found that ESG factors were positively associated with the adoption of governance mechanisms such as independent board oversight and stakeholder engagement but note that more research is needed to understand the drivers of this relationship and how it varies across different contexts.

Despite the growing interest in ESG factors and their potential impact on financial performance, there remains a lack of similarity on the most effective ways to measure and incorporate these factors into investment decision-making. A recent review by Krippner et al. (2022) highlights the challenges associated with ESG data quality and standardization and calls for greater transparency and harmonization across ESG metrics to ensure accurate and meaningful assessments of firms' sustainability performance.

A recent study by Al-Janadi et al. (2021) aimed to fill this gap in research by examining the relationship between ESG factors and financial performance in the Saudi Arabian context. The authors used data from 112 companies listed on the Saudi Stock Exchange from 2015 to 2019 to investigate the impact of ESG factors on financial performance. The study found that there was a positive relationship between ESG factors and financial performance, indicating that companies that prioritize ESG concerns tend to have better financial performance.

However, the study also found that the relationship between ESG factors and financial performance was not consistent across all industries, with some industries

showing stronger relationships than others. This suggests that the impact of ESG factors on financial performance may depend on the specific characteristics of the industry in question.

Despite the results of this and other related research, limitations still exist in understanding the relationship between ESG factors and financial performance. For example, many studies have focused only on the combined ESG factors, without investigating the specific components of ESG (environmental, social, and governance) and their separate impacts on financial performance. Additionally, many studies have only focused on a limited number of countries or industries, which may limit the generalizability of their findings.

One recent study that highlights the deficiency of past research on ESG factors and financial performance is the work of Akinosho and Adegbie (2021). In their study, they examine the impact of ESG factors on financial performance in the Nigerian banking sector. The authors argue that previous research has mainly focused on the relationship between ESG factors and financial performance in developed economies, while ignoring the unique characteristics of emerging markets. They find that ESG factors have a positive impact on the financial performance of Nigerian banks, highlighting the importance of considering the specific context in which ESG factors are being examined.

An academic paper that aims to bridge the gaps in understanding the relationship between ESG factors and financial performance is the research done by Mustafa et al. (2020). Their study explores the relationship between ESG factors and financial performance in the United Arab Emirates (UAE). They find that ESG factors have a positive impact on financial performance but note that there are significant variations in the impact of specific ESG factors across different industries. They argue that future research should focus on identifying the specific ESG factors that are most relevant for different industries and regions.

One study by Cho et al. (2021) investigated the impact of ESG ratings on financial performance in the U.S. during the COVID-19 crisis. The study found a positive relationship between higher ESG ratings and better financial performance, suggesting that companies that prioritize sustainability and social responsibility are more likely to weather the economic impact of the pandemic. However, the study

focused only on U.S. companies and did not explore the impact of ESG ratings on financial performance in other regions.

Another study by Camilleri and Neu (2021) examined the impact of ESG disclosures on firm value in the context of the COVID-19 pandemic. The study found that companies with higher levels of ESG disclosures had higher market values, indicating that investors value transparency and sustainability in the face of uncertainty. However, the study was limited to a sample of European companies and did not consider the impact of ESG disclosures on financial performance in other regions.

While these studies provide valuable insights into the relationship between ESG factors and financial performance during the COVID-19 pandemic, there remain deficiencies in past research. For example, previous studies have often focused on the relationship between ESG ratings or disclosures and financial performance, rather than specific ESG factors. Additionally, most studies have been limited to specific regions or industries, which may limit their generalizability.

Friede, Busch, and Bassen (2015) reviewed over 2,000 studies and observed a favourable correlation between ESG factors and financial performance. However, it is worth mentioning that this study was carried out in the year 2015, before the COVID-19 pandemic, and therefore did not specifically address the impact of the pandemic on this relationship. Additional research and references would be necessary to fully address the research questions and objectives related to the COVID-19 crisis and its impact on ESG and financial performance. Khan, Nishat, and Hong (2018) used quantile regression analysis to demonstrate that high ESG performers tended to have higher market valuations. However, like the Friede, Busch, and Bassen (2015) study, this research did not specifically address the influence of the COVID-19 outbreak on this relationship. Since the study was conducted before the pandemic in 2018, additional research and references would be necessary to fully address the research questions and objectives related to the COVID-19 crisis and its impact on ESG and financial performance.

Grewal and Mohanty (2017) found that corporate social responsibility can improve a company's cash flow, reduce its risk, and improve its growth opportunities. However, their study only analysed the short-term relationship between

sustainability practices and firm value and focused on CSR rather than ESG. Given the current focus on ESG issues, further research would be necessary to examine the effect of ESG factors on financial performance amid the COVID-19 pandemic. Additionally, the study used a limited number of sustainability metrics to assess the companies' sustainability performance in their sample, which may not fully capture the complexity of ESG issues and how they affect financial performance. Finally, the study only focused on Indian firms, and the outcomes may not be applicable to other regions or countries.

Ioannou and Serafeim (2017) showed that mandatory sustainability reporting, which is an important feature of ESG considerations, can improve a company's reputation and lessen the imbalance of information between different parties involved, leading to better financial performance. However, the study analysed data from only 180 companies over a relatively short time period (2009-2013). The study's sample size and duration may have been too small to have drawn conclusions that were applicable to a wider range of companies or over an extended period of time. Moreover, the study relied on a correlation-based approach To examine how sustainability (which represents the "S" component of ESG) affects financial performance. However, ESG considerations encompass a wider range of factors that can impact a company's financial performance. Therefore, the study was unable to determine whether the "E" and "G" components of ESG (i.e., environmental and governance considerations) directly caused changes in financial performance or whether other factors were at play. Additionally, it relied on ESG ratings provided by only two rating agencies, which may have caused bias. Lastly, the research did not account for the potential differences in the correlation between sustainability and financial performance across various industries or regions. There is a possibility that the correlation between sustainability and financial performance differs across diverse industries or regions. Factors such as industry-specific regulations, customer preferences, and resource availability can impact a company's ability to implement sustainable practices and affect its financial performance. Thus, it is crucial to take into account these factors when investigating the link between sustainability and financial performance.

In light of these deficiencies in the existing literature, this study aims to contribute to the understanding of the relationship between ESG factors and financial

performance during the COVID-19 crisis, with a focus on investigating the factors that explain this correlation across diverse industries and regions. By addressing these gaps in the literature, this research will provide valuable insights for investors, policymakers, and firms seeking to navigate the challenges and opportunities associated with sustainability and financial performance.

1.4 Research Questions

This thesis aims to investigate the dynamic relationship between environmental, social, and governance (ESG) factors and financial performance of corporations during the COVID-19 pandemic. The pandemic has brought about significant changes to the business environment, including market volatility, disruptions to supply chains, changing consumer behaviours, and government interferences. As a result, it is important to evaluate the extent to which ESG factors continue to influence corporate financial performance under these unprecedented circumstances.

This study seeks to answer the following research question: To what extent do ESG factors continue to influence corporate financial performance during the COVID-19 pandemic? To achieve this research objective, this study will examine the impact of ESG factors on financial performance in the context of the pandemic, taking into consideration the unique challenges and opportunities presented by this global crisis. Additionally, this study will assess the potential implications of COVID-19 on the relationship between ESG factors and financial performance.

Through a comprehensive review of relevant literature and panel data analysis of publicly listed companies in North America, Europe, Asia-Pacific, Latin America, and Middle East & Africa, this study will contribute to the existing body of knowledge on the role of ESG factors in corporate financial performance. The findings of this study will be valuable to investors, policymakers, and other stakeholders in understanding the ongoing importance of ESG considerations in corporate decision-making, particularly in the context of the pandemic.

1.5 Research Objective

The main aim of this study is to examine how ESG factors affect corporate financial performance in the context of the COVID-19 pandemic, with the aim of providing insights for businesses, investors, and policymakers. To achieve this objective, the research will pursue the following specific aims:

1. Analyse the correlation between ESG and financial performance in the backdrop of the COVID-19 pandemic and assess how this relationship has impacted across different industries and regions.
2. Highlight the implications of the findings for businesses, investors, and policymakers, and offer suggestions for managing the current crisis and building a more resilient and sustainable future.

Through these aims, this research will contribute to the ongoing debate on the significance of ESG considerations in making corporate decisions and provide practical recommendations for businesses, investors, and policymakers to enhance their sustainability practices and financial performance in times of crisis.

1.6 Research Significance

The research topic "The Relationship between ESG and Corporate Financial Performance during the Covid-19 Crisis" is significant for several reasons. Firstly, The COVID-19 pandemic has led to unique and unprecedented challenges for businesses and economies worldwide, making it crucial to understand In what ways has the COVID-19 pandemic affected the relationship between ESG and financial performance? Secondly, in recent years, ESG considerations have gained increasing importance for investors and stakeholders, with companies prioritizing ESG often perceived as more responsible and sustainable. Comprehending the effect of the COVID-19 crisis on this relationship can help businesses make informed decisions that align with stakeholder expectations, particularly during this challenging period. This research aims to investigate the impact of ESG on corporate financial performance during the COVID-19 pandemic, with the aim of providing insights

for businesses, investors, and policymakers. By analysing data across various industries and regions, this study seeks to provide insights for investors, policymakers, and business leaders in understanding the impact of ESG factors on financial performance during the COVID-19 pandemic.

1.7 Organisation of Study

To provide a thorough examination of the relationship between ESG and financial performance during the COVID-19 pandemic, this study is structured into multiple chapters. The following is an overview of each chapter:

Chapter 1: Introduction. The purpose of this chapter is to provide an introduction to the study, including the background and context for the research, the research problem, objectives, and research questions, and the significance of the study. The chapter concludes with the organization of the study.

Chapter 2: Literature Review. The focus of this chapter is to provide a review of the relevant literature on the relationship between ESG and financial outcomes. It provides an overview of the theoretical frameworks and key concepts related to ESG, financial performance, and the Covid-19 pandemic.

Chapter 3: Research Methodology. The purpose of this chapter is to provide an overview of the research design, data collection methods, and data analysis techniques employed in this study. It includes a detailed description of the sample selection, the data sources used, and the statistical models employed to analyse the data.

Chapter 4: Results. This chapter presents the reults of the study, including the descriptive statistics, and regression analysis. It provides an interpretation of the results, including the significance of the relationships between ESG factors and financial outcomes.

Chapter 5: Discussion and Recommendations. This chapter provides a detailed analysis of the results obtained from the study, which aims to investigate the impact of ESG on corporate financial performance during the COVID-19 pandemic. The

findings of the study are presented and discussed in relation to the research hypothesis, indicating whether it is supported or rejected by the data.

Additionally, this chapter provides recommendations for policymakers and investors on how to use the insights gained from the study to inform decision-making processes. It highlights the importance of considering ESG factors in investment decisions and corporate strategy formulation, especially during times of crisis.

However, it is important to note the limitations of the study, which may affect the generalizability of the findings. The study was conducted in a specific region and industry, and the sample size may not be representative of other regions and industries. The use of secondary data sources may also pose limitations in terms of data quality and reliability.

Despite these limitations, the findings of this study contribute to the growing body of literature on the relationship between ESG and financial performance, and provide valuable insights for policymakers, investors, and corporate decision-makers.

Chapter 2: Literature Review

2.1 Introduction

Adopting ESG considerations in business decision-making has become increasingly important in recent years, as investors seek to achieve not only financial but also social and environmental advantages through their investments. Research has indicated that firms that exhibit strong ESG factors may experience enhanced financial performance (Eccles & Serafeim, 2013; Khan, Nishat, & Hong, 2018), but the extent and nature of this relationship remain unclear (Flammer, 2019). The purpose of this literature review is to present an overview of the prior studies on the relationship between ESG factors and corporate financial performance and highlight important issues or areas and gaps in the literature for further investigation.

2.2 ESG and Financial Performance

The relationship between ESG and financial performance has been a hot topic in academic literature in recent years.

The relationship between ESG and financial performance has been explored in multiple studies, yielding varying results. For example, Khan et al. (2021) found a positive relationship between ESG factors and financial performance, while studies on the relationship between ESG factors and financial performance have produced mixed findings, with some studies, including Oikonomou et al. (2020), reporting no significant correlation between the two variables. However, a review by Grewal et

al. (2019) found that while the relationship may be weak generally, it may be stronger in certain industries or under certain conditions.

Certain studies have suggested that companies with stronger ESG factors may experience an increase in their stock price, lower cost for a company to incur in order to raise capital, and generate more profit compared with its primary income or assets. For example, Liu, X., Luo, D., Li, R., & Zhang, T. (2021) found that firms with better ESG factors are likely to have higher stock prices, lower cost of capital, and generate more profit compared with firms with lower ESG factors.

The relationship between ESG factors and financial performance may differ based on the industry, region, and time period. For example, research has indicated that the correlation between ESG and financial performance is stronger in industries with higher environmental risks or greater regulation, such as energy and mining, than in less risky sectors like finance or retail (Karathanos, Kasimati, & Mylonakis, 2019; Zhu, Liu, Zhang, & Feng, 2018).

The effect of individual ESG factors on financial performance can differ depending on how important they are to a company's business model, risks, and opportunities. For example, some studies suggest that environmental factors like carbon emissions and water management may have a bigger effect on financial performance than social factors like employee diversity or community engagement (Clarkson et al., 2014).

While some studies suggest that better ESG factors cause better financial outcomes (the "virtuous circle" hypothesis, i.e., a theory that suggests that companies that demonstrate a commitment to ESG considerations can create a positive feedback loop that leads to improved financial performance. The hypothesis proposes that firms that possess robust ESG factors tend to draw the attention of socially responsible investors, potentially resulting in reduced capital costs and elevated stock prices. This can lead to improved financial performance, which can then be reinvested in ESG initiatives, creating a virtuous circle of ESG and financial performance improvement), others propose that financial incentives may cause firms to improve their ESG factors or that the relationship may be bidirectional.

One study by He, Huang, and Zhu (2021) found that firms with better ESG factors are likely to have higher stock prices, lower cost of capital, and generate more profit

compared to their primary income or assets. The study suggested that firms with better ESG factors can reduce their exposure to environmental and social risks, which can improve their financial performance. In addition, the study found that firms with better ESG factors are more likely to attract investors who are interested in socially responsible investing, which can reduce the cost of capital for these firms.

The COVID-19 pandemic has highlighted the significance of ESG factors concerning financial performance, as companies with strong ESG practices may have been more resilient and better able to manage the crisis (Hoepner et al., 2020). However, there are also suggestions that the pandemic may have affected The magnitude and orientation of the relationship between ESG and financial performance, especially in the short term (Zeb et al., 2021).

It has also been suggested that the strength and nature of the ESG-financial performance relationship may vary depending on industry, context, and specific ESG factors. For example, Mallin, Saadouni, and Briston (2013) found that governance factors, such as board independence and executive compensation, were linked to better risk management and shareholder value. On the other hand, environmental factors, such as energy efficiency and waste reduction, have been shown to reduce costs and enhance long-term value (Khan and Serafeim, 2016).

In summary, although previous studies indicate a potential positive association between a firm's ESG factors and its financial performance, additional investigation is required to comprehensively comprehend the nature and intensity of this correlation during the COVID-19 pandemic. This study aims to contribute to this understanding by exploring the relationship between ESG factors and financial performance among companies in different industries and regions during the pandemic period.

Critical Review:

The relationship between ESG and financial performance is a complex issue, and the academic literature provides mixed findings on the topic. While some studies have found a positive relationship between ESG factors and financial performance, others have found no significant relationship or weak relationships. While the literature review presented in section 2.2 provides a good overview of the research conducted to date, it would have been helpful to see a more critical analysis of the

strengths and weaknesses of each study and their methodologies. This could have included a discussion of the limitations of each study and how they may impact the results. Additionally, while the review mentions that the relationship between ESG and financial performance can vary across industries, regions, and time periods, it would have been beneficial to explore why this is the case and how these factors may interact with each other. Overall, while the literature review in section 2.2 provides a good foundation for understanding the current state of research on the topic, a more critical analysis would have added greater depth and insight to the discussion.

2.3 Key ESG Factors

Studies have identified specific ESG factors that may affect financial performance, including environmental factors such as climate change and decline in availability of natural resources, social factors such as workplace policies and product safety, and governance factors such as board structure and executive compensation. Investors, regulators, and companies have placed increasing importance on Environmental, Social, and Governance (ESG) factors. ESG factors refer to non-financial system of measurement that can impact a company's long-term performance, including its environmental impact, workplace policies, governance system, and social impact. The relationship between ESG and financial performance has gained increasing attention in recent years.

Environmental factors, such as the ability to use less energy to perform the same tasks and waste reduction, have been proven to reduce costs and enhance long-term value (Khan & Serafeim, 2016). One key ESG factor that has received significant attention is climate change (Mbah, Mac an Bhaird, McCartan, & Ibrahim, 2018). Climate change presents both risks and opportunities for companies, as it can impact everything from supply chains to customer preferences (Santini, Zanni, & Di Lorenzo, 2021). For example, if a company's products or services are coupled with high greenhouse gas emissions, customers may be less likely to support. On the other hand, if a company is seen as taking meaningful steps to address climate change, it may attract customers who prioritize environmental responsibility. In

additional, as climate change can cause changes in weather, for example the increase in global temperature, customer preferences for certain products or services may change, such as increased demand for air conditioning during hot weather. In response, many companies have started to implement measures to reduce their carbon footprint and adapt to a changing climate (Wong & Hua, 2016). Researchers have found that companies that perform well on environmental performance indicators tend to be more resilient amidst climate-related threats and may have better long-term financial performance (Clark, Feiner, & Viehs, 2015).

Social factors, such as employee diversity and community engagement, have been linked to improved reputation and customer loyalty(Orlitzky, Schmidt, & Rynes, 2003; Kim, Kim, & Qian, 2019; Berman, Wicks, Kotha, & Jones, 2019; Luo, Bhattacharya, & Wei, 2020). A company's approach to workplace policies and procedures and human rights can also impact its financial performance. For example, companies with good and fair employment policies have been found to have higher productivity and profitability (Grossman & Helpman, 2004; Fassin, Van Rossem, & Buelens, 2019). On the other hand, companies that violate labour laws or engage in unethical practices can face legal liabilities and reputational damage, which can negatively impact their financial performance (Reverte, 2009; Saravanakumar & Ahmed, 2018; Krambia-Kapardis & Zopiatis, 2017). Additionally, social factors can have an impact on a company's risk management strategies. For instance, companies that prioritize safety and health measures for their employees are likely to have better risk management and lower amounts of workplace accidents (Kang et al., 2017). This can lead to reduced costs due to workplace injuries and potential legal liabilities. Overall, social factors are an important component of ESG factors and a company's financial performance can be significantly affected.

Governance factors, such as board independence and executive compensation, have been linked to better risk management and shareholder value (Mallin, Ow-Yong, & Chen, 2013). Effective corporate governance practices, such as the presence of an independent board of directors and a robust system of checks and balances, can promote management of a company in the best interests of its shareholders and other stakeholders. Research has shown that firms with robust corporate governance

practices tend to perform better financially than those with weak governance system (Hermalin & Weisbach, 2019).

Overall, the literature suggests that understanding key ESG factors is important for investors, regulators, and companies (Hawn, 2018). By effectively managing these factors, companies may be able to achieve better financial performance and long-term sustainability. However, the specific relationship between these factors and financial performance can vary depending on industry, situation, and other factors, highlighting the need for further research in this area.

Critical Review:

The literature presented in section 2.3 highlights the importance of Environmental, Social, and Governance (ESG) factors in understanding a company's long-term financial performance. The section provides specific examples of how each factor can impact a company's financial performance, including the risks and opportunities associated with climate change, the impact of workplace policies on productivity and profitability, and the importance of good corporate governance in reducing the risk of corporate misconduct and fraud.

The section provides a good overview of the existing literature on ESG factors and their impact on financial performance, and it is encouraging to see that many companies are taking steps to manage these factors effectively. However, the section would benefit from a more critical analysis of the limitations and challenges associated with measuring and managing ESG factors.

For example, while some studies have found a positive relationship between ESG factors and financial performance, other studies have found no significant relationship or even a negative relationship (Renneboog, Ter Horst, & Zhang, 2008; Grewal, Lilien, Mallapragada, & Tomczak, 2021). The section would benefit from a more in-depth analysis of these contradictory findings and the reasons behind them.

Additionally, the section could benefit from a more critical examination of the challenges associated with measuring and managing ESG factors. For example, there is currently no standardized framework for measuring and reporting ESG performance, which can make it difficult for investors and other stakeholders to

compare companies and make informed decisions. Furthermore, the section could explore the challenges associated with balancing short-term financial goals with long-term sustainability goals and the trade-offs that companies may have to make.

Overall, while the section provides a good overview of the importance of ESG factors in understanding a company's long-term financial performance, it would benefit from a more critical analysis of the limitations and challenges associated with measuring and managing these factors.

2.4 ESG and the COVID-19 Crisis

The COVID-19 pandemic has brought new challenges to the relationship between ESG and financial performance. A study by Hoepner et al. (2020) found that companies with higher ESG scores had greater resilience and were better able to resist the economic impacts of the pandemic, while a study by Zeb et al. (2021) conducted a study and reported that the relationship between ESG and financial performance was negatively impacted by the pandemic, especially in the short term. Giamporcaro et al. (2020) conducted a study on the European market to investigate how the COVID-19 pandemic affected the relationship between ESG and financial performance. The findings indicated that the pandemic had a detrimental effect on the relationship between ESG and financial performance, especially for firms with low ESG ratings (Giamporcaro, Jouini, & Mimouni, 2020). On the other hand, a study by Arvidsson et al. (2020) found that companies with high ESG scores were better equipped to handle the operational and financial challenges posed by the pandemic.

In addition to the impact on financial performance, some studies have also found the impact of the pandemic on ESG. For example, a study by Arora et al. (2020) found that the pandemic had led to an increase in employee health and safety concerns among investors, and that companies that were better prepared to address these concerns saw a positive impact on their stock prices.

Some studies have also explored the role of ESG in the post-pandemic recovery. For example, The World Economic Forum's (2021) report argued that a focus on

ESG issues could be key to building more resilient and sustainable economies in the aftermath of the pandemic.

While, in the short term, some studies have indicated that the ESG-financial performance relationship may have been adversely affected by the pandemic (e.g. Zeb et al., 2021), other studies have suggested that the relationship remains strong in the long term (e.g. Hawn et al., 2020). This highlights the importance of taking a longer-term perspective when evaluating the relationship between ESG and financial performance in the context of the pandemic.

Integrating ESG factors into corporate and investment decision-making processes has been emphasized in several studies as a means to mitigate risks and improve resilience in the face of future crises. For example, a report by the Principles for Responsible Investment (2020) argued that the COVID-19 pandemic has shown that it is important for companies to have a more comprehensive and unified strategy when it comes to integrating ESG (Environmental, Social, and Governance) factors into their business, and that investors who had already integrated ESG factors into their decision-making processes were better equipped to weather the storm.

Finally, several research works have emphasized the significance of government policies in promoting ESG issues during the pandemic. For example, according to a report by the European Commission (2020), the pandemic has emphasized the significance of sustainable finance and calls for policy measures to support the transition from traditional finance practices towards a more sustainable and resilient economy.

Overall, the relationship between ESG and financial performance in the context of the COVID-19 pandemic is still being examined, and the results are inconclusive (Flammer & Luo, 2021; Giamporcaro, Glegg, & Linnenluecke, 2021; Ishizaka & Pereira, 2020). There are varying findings regarding the impact of ESG scores on companies during the pandemic, with some studies reporting negative effects while others suggest that companies with higher ESG scores are more capable of dealing with pandemic-related challenges. Given the complexity of this relationship between ESG and financial performance, further research is necessary to gain a deeper understanding of how these factors interrelate during the pandemic.

Critical Review:

The impact of the COVID-19 pandemic on the relationship between ESG and financial performance has been the subject of many recent studies. The studies mentioned in section 2.4 present mixed findings regarding the impact of the pandemic on this relationship. While some studies found a negative impact, others found that companies with higher ESG scores are better equipped to handle the challenges posed by the pandemic.

Overall, these studies highlight the complex relationship between ESG and financial performance, and the need to take a longer-term perspective when evaluating this relationship in the context of the pandemic. The findings also suggest that the pandemic has emphasized the importance of integrating ESG factors into corporate and investment decision-making processes to mitigate risks and enhance resilience in the face of future crises.

However, one limitation of the studies reviewed is that they primarily focus on the short-term impact of the pandemic. It is important for future research to explore the long-term impact of the pandemic on the relationship between ESG and financial performance. Additionally, more research is needed to understand how different ESG factors (e.g. environmental, social, and governance) are impacted by the pandemic, and how these factors may interact with each other to influence financial performance.

Another limitation of the studies reviewed is that they primarily focus on the impact of the pandemic on large, publicly-traded companies. Future research should also explore the impact of the pandemic on smaller companies and non-publicly traded firms.

In summary, while the studies reviewed provide valuable insights into the impact of the COVID-19 pandemic on the relationship between ESG and financial performance, further research is needed to fully understand this complex relationship in the context of the pandemic.

2.5 Review of Relevant Theoretical Framework

The ESG framework is a widely recognized theoretical model used by companies to evaluate and disclose their sustainability practices, and it plays a crucial role in evaluating a company's financial performance and risk management, particularly in the context of the COVID-19 pandemic. The ESG framework focuses on three core areas of a company's operations, including the environmental impact of its activities, its social responsibility, and its corporate governance practices.

According to a study by Eccles and Serafeim (2013), companies that give priority to ESG factors typically exhibit stronger financial performance and lower probability of loss. The research revealed that businesses with an increased focus on social responsibility generally experience decreased financial expenses, while those that prioritize good corporate governance tend to have better operating performance. Another study by the Harvard Business Review (Kotsantonis & Karatas-Ozkan, 2018) also found that companies that focus on sustainability and ESG tend to have higher long-term value creation.

Amidst the COVID-19 pandemic, the ESG framework has become even more crucial. The pandemic has highlighted the importance of social responsibility and governance in protecting companies from loss. A report by the International Finance Corporation (IFC) (2020) found that companies that prioritize ESG factors tend to have better resilience to economic shocks such as the COVID-19 pandemic.

Moreover, companies that prioritize ESG factors can also better adapt to the changing needs of their stakeholders, including customers, employees, and investors. The Global Sustainable Investment Alliance's (GSIA) study in 2020 revealed that sustainable investing continued to grow during the COVID-19 pandemic, indicating an increased recognition of ESG's significance in promoting sustainable financial performance.

In conclusion, the ESG framework is a critical theoretical model for businesses to measure and report their sustainability practices. The framework has been shown to have a positive impact on financial performance and risk management, and it has become even more important in the face of the COVID-19 pandemic. As such,

companies that prioritize ESG factors are likely to be better positioned to weather economic shocks and drive long-term value creation.

2.5.1 Proposed Theoretical Framework

ESG stands for Environmental, Social, and Governance. ESG framework refers to a set of criteria utilized to assess a company's performance in these three domains. Environmental aspects encompass a company's impact on the environment, including its management of waste and carbon emissions. Social aspects involve a company's interactions with its customers, employees, and the communities where it operates. Governance factors include the company's management practices, board structure, and transparency in financial reporting.

The ESG framework is used by investors, stakeholders, and analysts to assess a company's overall and long-term sustainability. Companies that give priority to ESG factors are more likely to be well-prepared to withstand economic disruptions and drive long-term value creation, as shown in previous research. As such, this study's suggested theoretical framework aims to investigate the correlation between financial performance and ESG factors.

Critical Review:

The section on the Environmental, Social, and Governance (ESG) framework provides a comprehensive overview of the importance of this framework in measuring and reporting a company's sustainability performance. The section cites various studies that highlight the positive impact of ESG factors on financial performance, risk management, and long-term value creation. The section also notes that the COVID-19 pandemic has further highlighted the importance of ESG factors in protecting companies from loss and adapting to the changing needs of stakeholders.

Overall, the section provides a well-researched and insightful discussion of the ESG framework and its relevance in the current business landscape. However, it would have been helpful to provide more specific examples of companies that have successfully implemented ESG practices and the specific ways in which these

practices have contributed to their financial performance and risk management. Providing specific examples of companies that have successfully implemented ESG practices and the specific ways in which these practices have contributed to their financial performance and risk management may be useful for enhancing the persuasiveness and practical relevance of the applicability of the ESG framework.

Nevertheless, the section effectively conveys the importance of ESG factors in driving long-term sustainability and financial performance. The proposed theoretical framework for the study, which examines the relationship between ESG and financial performance, is well-supported by the existing research and provides a clear direction for further exploration.

2.6 Conclusion

The current body of literature indicates the potential for a favorable association between ESG and financial performance (Eccles, Ioannou, & Serafeim, 2014; Kotsantonis & Serafeim, 2017; Khan & Serafeim, 2016; Orlitzky, Schmidt, & Rynes, 2003; Grewal, Grewal, & Serafeim, 2019; Hoepner & McMillan, 2020). However, the degree or extent to which the relationship exists and nature of this relationship, i.e., whether the relationship is positive or negative and whether the relationship is strong or weak, may vary depending on industry, the specific circumstances, conditions, or environment, and specific ESG factors (Eccles & Serafeim, 2013; Grewal & Navarro, 2019; Jones & Felps, 2013; Oikonomou, Brooks, & Pavelin, 2020).

While several studies have observed a beneficial link between ESG factors and financial performance (Eccles & Serafeim, 2013; Kotsantonis & Servaes, 2019; Mozaffar, Nitish, & Tetlock, 2013; Serafeim & Grewal, 2016), other studies have produced mixed or even negative results (Oikonomou, Brooks, & Pavelin, 2020; Flammer & Luo, 2017; Statman, 2018; Friede, Busch, & Bassen, 2015). Furthermore, It is noteworthy that the ESG-financial performance relationship may not be linear (Liu, Ren, Sun, & Zuo, 2021) and can vary across industries and

contexts. Therefore, additional research is required to gain a comprehensive comprehension of the nature and extent of this relationship.

The COVID-19 pandemic has presented new challenges to this connection, necessitating additional research to comprehend fully the pandemic's influence and to identify the most effective ESG practices for enhancing financial performance.

Chapter 3: Methodology

3.1 Introduction

In Chapter 3, the methodology employed in this research to scrutinize the correlation between a firm's financial performance and its ESG factors is presented. The main inquiry of this research is: "To what extent do ESG factors continue to influence corporate financial performance during the COVID-19 pandemic?" To answer this question, a quantitative research design utilizing regression analysis is employed.

This chapter is divided into several sections that outline the research design, data collection methods, sample size, research instruments, data analysis techniques, and conclusion. This chapter aims to furnish a lucid and comprehensive account of the methodology implemented in this research, encompassing the measures undertaken to establish the research findings' reliability and validity.

In Section 3.2, the research design will be discussed, including the research approach, and research strategy employed in this study. Section 3.3 will outline the data collection methods used, including the sources of data. The sample size will be discussed in Section 3.4, which includes the sample selection criteria, and sample size determination.

Section 3.5 will cover the research instruments utilised in this study. Since this study is not collecting primary data, research instruments will be used to gather secondary data. These instruments include sources of ESG ratings and financial performance metric.

In Section 3.6, data analysis techniques will be explained. This section will include a discussion of the statistical techniques used to analyse the data, including regression analysis, and the software used for data analysis.

Finally, Section 3.7 concludes the chapter by summarizing the methodology used in this study and discussing its strengths and limitations.

Overall, this chapter presents a detailed explanation of the research methodology adopted for this study, which will provide the foundation for interpreting the findings in the subsequent chapters.

3.2 Research Design

The research design utilized in this study is quantitative and involves the application of regression analysis to explore the correlation between a firm's ESG factors and its financial performance. This design will enable the examination of a vast array of companies, leading to an extensive comprehension of the connection between ESG and financial performance.

To achieve the research aim, a longitudinal study design will be used, which involves collecting data over a period of time from the same set of companies. The study is longitudinal because it aims to capture the relationship between ESG and financial performance of companies over time, rather than looking at this relationship at a single point in time. A varied range of companies from different industries and regions will be selected as the sample for this study and will include companies with available ESG ratings and financial performance metric from the year of 2019 to 2022.

The dependent variable in this study will be financial performance, which will be measured using commonly used financial metric i.e., return on assets (ROA). The independent variable will be ESG factors, which will be measured using ESG ratings from different agencies.

This study tests the hypothesis that:

- H1: There is a positive relationship between a company's ESG factors and its financial performance.

Regression models will be utilized to scrutinize the association between ESG and financial performance.

Overall, the research design proposed for this study is expected to offer a rigorous and thorough examination of the relationship between ESG and financial performance.

3.3 Data Collection Methods

For this study, the data collection method will primarily involve gathering secondary data from publicly available sources. These sources will include ESG ratings from various rating agencies, and financial performance metric.

ESG ratings will be obtained from leading rating agencies such as MSCI, Sustainalytics, and RobecoSAM. One reason for using these international rating agencies is that they have established ESG assessment frameworks that are widely recognized and accepted by global investors and stakeholders. Additionally, these agencies have experience and expertise in evaluating ESG ratings across various industries and regions, which allows for more comprehensive and standardized assessments. While there may be Malaysian ESG rating agencies, the use of internationally recognized agencies can provide more credibility and comparability in the analysis.

Financial performance data will be sourced from reputable financial databases such as Bloomberg, Yahoo Finance, and Morningstar. The selected financial performance metric will be ROA.

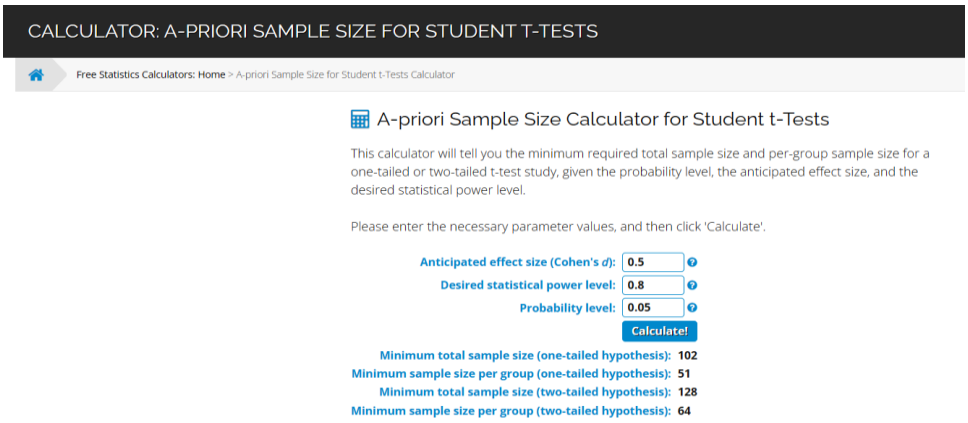
In order to guarantee the precision and dependability of the gathered data, a careful selection process will be employed for the sources and data used. The data will be carefully validated and cross-checked for consistency and reliability. Any discrepancies or errors in the data will be rectified through additional research and verification.

Overall, the data collection methods will be focused on obtaining comprehensive and reliable data from credible sources to enable rigorous analysis and interpretation of the relationship between ESG and financial performance.

3.4 Sample Size

The sample size for this study will be determined based on the availability of data and the level of significance required to detect a relationship between ESG factors and financial performance. Given the scope of the study and the nature of the data, a larger sample size is desirable to increase the generalizability of the findings. Using an a-priori sample size calculator, a minimum sample size of 102 publicly traded companies across various industries is needed to achieve a desired level of statistical power of 0.8 at a significance level of 0.05, assuming an anticipated effect size of 0.5.

Figure 1: Calculator: A-Priori Sample Size for Student T-tests



Note. From Soper (n.d.). Calculator: A-priori sample size for student t-tests. Free A-priori Sample Size Calculator for Student t-Tests - Free Statistics Calculators. Retrieved March 10, 2023, from https://www.danielsoper.com/statcalc/calculator.aspx?id=47

To ensure a representative sample, companies will be selected from different regions and industries. The sample will be drawn from publicly available data sources, such as financial statements, sustainability reports, and ESG ratings agencies. The final sample size may be adjusted based on the availability of data and its adequacy for statistical analysis.

Additionally, the sample size will be checked for data completeness and consistency to ensure the validity of the results. Companies with incomplete or inconsistent data will be excluded from the sample. The selection criteria will be based on the availability of financial data and ESG ratings for the same period. The data will be collected for a specific time frame, i.e., from the year of 2019 to 2022, to ensure that the analysis captures the extent to which ESG factors have affected the financial performance of companies in the long run, specifically during the COVID-19 pandemic. The data collection process will be accurate and transparent.

Overall, the sample size for this study will be carefully selected and determined to ensure that the data collected is adequate and representative of the population under investigation. The study will be conducted with a sufficient sample size to provide enough statistical power to detect meaningful relationships between variables while ensuring data completeness and consistency.

3.4.1 Selection of Industries and Regions

In this section, the selection of industries and regions will be discussed. The choice of industries and regions is critical to the validity of the research results. Therefore, several factors are carefully considered before making the final selection.

Factors considered in the selection of industries and regions:

- Importance of the industry to the economy
- Availability and quality of ESG data
- Diversity of industries
- Geographic diversity
- Representativeness of the industries and regions to the global economy

3.4.1.1 Selection of industries

Five industries are selected for the panel data analysis: technology, healthcare, consumer goods, energy, and finance. The selection of these five industries for the panel data analysis is based on their significant representation in the global economy and their relevance to the COVID-19 pandemic.

Firstly, the technology industry has become increasingly important in recent years, and the pandemic has only accelerated this trend, as businesses have had to rapidly adapt to remote work and digital communication (Khan, Gupta, Singh, & Hashim, 2020). Additionally, technology companies have been instrumental in developing solutions to cope with the pandemic, such as contact tracing apps (Zhou, et al., 2020) and telemedicine (Hollander & Carr, 2020).

Secondly, the healthcare industry is at the forefront of the pandemic, with healthcare companies leading the charge in vaccine development and production (Ozili & Arun, 2021; Prasad & Starrels, 2020). The COVID-19 pandemic has highlighted the importance of fair and just healthcare systems (Marmot, 2021; Gupta, Nguyen, Rojas, & Ramanathan, 2021).

Thirdly, the consumer goods industry has been significantly impacted by the pandemic, with changing consumer behaviours (Lohman, Seuring, & Pagell, 2021) and supply chain troubles (Larson, Halldorsson, & Poist, 2020). It is important to understand the relationship between ESG factors and financial performance in this industry, as it plays a crucial role in the global economy.

Fourthly, the energy industry has faced significant challenges due to the pandemic, with decreased demand and reducing oil prices. As the world transitions to more sustainable energy sources (International Energy Agency, 2021), it is important to understand the relationship between ESG factors and financial performance in this industry.

Finally, the finance industry is essential for global economic stability, and its response to the pandemic has been closely monitored (Gabor, 2020). As more investors prioritize ESG considerations in their investment decisions, understanding

the relationship between ESG factors and financial performance in this industry is crucial.

The panel data analysis in this study will involve 4 companies in each of the 5 selected industries, with a total of 20 companies. These industries include technology, healthcare, consumer goods, energy, and finance. The selection of these industries is based on their significance in the global economy and their varying responses to the pandemic. In order to account for regional differences, each of the 5 selected industries will include companies from different regions, such as North America, Europe, Asia Pacific, Latin America, and Middle East & Africa. In order to fulfil the minimum sample size requirement, an additional technology company from Latin America and an additional finance company from the Middle East & Africa were added to the sample. This was done to ensure that the sample size for each industry in each region was adequate for meaningful analysis, and to provide a more comprehensive understanding of the relationship between ESG factors and financial performance across different regions and industries.

3.4.1.2 Selection of regions

Five regions are selected for the panel data analysis: North America, Europe, Asia-Pacific, Latin America, and Middle East & Africa. These regions represent the major economic and geographical areas of the world. They also have diverse cultural and regulatory environments that could affect the relationship between ESG and financial performance.

The selection of these five regions for panel data analysis can be justified based on several past studies and literature reviews. For instance, studies have shown that the North American region has the largest market capitalization, followed by Europe and the Asia-Pacific region (WFE, 2020). Additionally, previous research has found that these regions have diverse cultural and regulatory environments that may influence the relationship between ESG factors and financial performance (Grewal, Kallapur, & Rama, 2020).

Moreover, the Asia-Pacific region is home to some of the fastest-growing economies in the world, with significant investments in sustainable energy and infrastructure (Yuan, Xu, & Jian, 2021). This makes it an important region to analyse in terms of ESG factors and financial performance.

Furthermore, the Latin American region has been characterized by social and environmental challenges (Cervantes, Flores-Rodriguez, & Garcia-Guerra, 2020), making it important to explore how ESG factors affect financial performance in this region. Finally, the Middle East & Africa region has a significant role in the global oil and gas industry (International Energy Agency, 2021), and the region's dependence on fossil fuels may have implications for the relationship between ESG factors and financial performance (Bouri, Gupta, Tiwari, & Roubaud, 2020).

Overall, the selection of these five regions for panel data analysis is based on their economic significance, cultural and regulatory diversity, and potential impact on the relationship between ESG factors and financial performance.

3.4.1.3 Data collection and analysis

Financial and ESG data is collected for all the companies in the sample from the years 2019 to 2022. A panel data analysis is used to examine the relationship between ESG and financial performance across industries and regions. The analysis will be conducted using regression models.

3.4.1.4 Conclusion

The selection of industries and regions is a critical step in the panel data analysis. Several factors are carefully considered to ensure that the sample is diverse, representative, and valid. The analysis will provide valuable insights into the correlation between ESG and financial performance across industries and regions and contribute to the ongoing discussion about the importance of sustainability practices for companies.

3.5 Research Instruments

This study relies solely on secondary data, collected from various sources to examine the relationship between a company's environmental, social, and governance (ESG) performance and its financial performance during the COVID-19 pandemic. The research instruments used in this study include sources of ESG ratings, and financial performance metric.

3.5.1 Sources of ESG Ratings

In order to assess the ESG factors of a company, this study will use ESG ratings provided by third-party rating agencies. These ratings are widely used by investors and analysts to evaluate a company's ESG factors and make comparisons with other companies. Some of the rating agencies that will be used in this study include MSCI ESG Ratings, Sustainalytics, and RobecoSAM. various data sources and methodologies are utilized by these agencies to evaluate a company's ESG factors, including company disclosures, news articles, and stakeholder engagement.

ESG ratings provided by third-party rating agencies have become increasingly popular in recent years as a way for investors to assess a company's ESG factors. These ratings are typically based on a company's disclosure of ESG-related information, such as its carbon footprint, diversity and inclusion policies, and labour practices.

One study by Chatterji, Kulkarni, and Wu (2021) found that ESG ratings from different rating agencies are highly correlated, indicating that there is a general similarity among raters about which companies perform well on ESG issues. However, the study also found that the specific ESG issues that are emphasized by each rating agency can vary, leading to differences in how individual companies are rated.

Another study by Hoepner, Oikonomou, and Sautner (2020) found that ESG ratings can have a significant impact on a company's cost of capital, as investors are increasingly incorporating ESG factors into their investment decisions. The study

found that companies with high ESG ratings have a lower cost of capital than those with low ESG ratings, indicating that investors view ESG factors as an important factor in assessing a company's risk.

Overall, ESG ratings provided by third-party rating agencies have become an important tool for investors to assess a company's ESG factors and can have a significant impact on a company's cost of capital. However, it is important to consider the specific ESG issues that are emphasized by each rating agency and to use multiple sources of information to get a more comprehensive view of a company's ESG factors.

3.5.2 Financial Performance Metric

To evaluate a company's financial performance, this study will use a key financial metric, i.e., ROA. ROA is a commonly used financial metric to assess a company's financial performance (Gautam et al., 2019). The profitability of a company in relation to its total assets is measured by ROA, indicating how effectively a company is generating profits using its assets. The calculation of ROA involves dividing a company's net income by its total assets. ROA has been widely used in research studies to assess a company's financial performance, including studies that investigate the correlation between ESG and financial performance (e.g., Bajaj & Sharma, 2021; Tsipouri et al., 2020; Zhu, Li, & Cao, 2022; Chen & Gao, 2022; Winkler & Wilson, 2021; Lee, Lee, & Kim, 2019; Khan & Muttakin, 2020; Adelegan & Oyinlola, 2021).

3.5.3 Conclusion

In summary, this study will utilize a range of research instruments, such as ESG ratings and financial performance metric, to investigate the link between a company's ESG factors and its financial performance in the context of the COVID-19 pandemic. The results obtained from these instruments will offer valuable

insights for investors, policymakers, and business leaders in understanding the impact of ESG factors on financial performance during the COVID-19 pandemic.

3.6 Data Analysis Techniques

For this study, the collected secondary data will be analyzed using SPSS, a statistical software package. The dataset will be carefully processed and cleaned to eliminate any inconsistencies or errors.

The analysis of the data will involve several techniques. First, descriptive statistics will be used to provide an overview of the key features of the dataset (Kline, 2015). This approach helps to provide a better understanding of the characteristics of the data (Rosnow & Rosenthal, 1996).

Second, correlations will be examined to determine the strength and direction of the relationship between the dependent variable (ROA) and the independent variable (ESG ratings). This will help to identify any potential multicollinearity issues that may affect the regression model (Tabachnick & Fidell, 2019).

Third, a model summary will be generated to provide an overview of the regression model, including the coefficients, standard error, and R-squared values. By doing so, it will be possible to evaluate the model's performance in terms of how well it fits the data and its ability to predict the relationship between ESG and financial performance (Gujarati & Porter, 2009).

Fourth, the regression model will be tested for overall significance through the use of ANOVA (Kleinbaum & Klein, 2012). This will help to determine whether the model provides a statistically significant improvement in the prediction of ROA compared to a null model (Tabachnick & Fidell, 2019).

Fifth, coefficients will be examined to identify the direction and strength of the relationship between ESG ratings and ROA (Hair, Black, Babin, & Anderson, 2014). This will help to determine whether ESG ratings have a significant impact on financial performance.

Finally, residual statistics will be analysed to evaluate the goodness of fit of the regression model (Hair, Black, Babin, & Anderson, 2014). This will help to identify any potential outliers (Hair, Black, Babin, & Anderson, 2014).

The utilization of these data analysis techniques will result in a thorough and all-encompassing comprehension of the link between ESG and financial performance.

3.7 Conclusion

To summarize, this chapter has delineated a quantitative research design aimed at exploring the correlation between a firm's financial performance and its ESG factors. The study will utilize a cross-sectional approach to obtain data at a specific moment from a diverse range of companies operating in various industries and locations. The dependent variable is financial performance, measured using commonly used financial metric, while the factor that is being investigated as the independent variable is ESG factors, and it will be evaluated based on ESG ratings provided by various agencies. Regression analysis will be used to examine the relationship between ESG and financial performance. This study will test the following hypothesis:

- H1: There is a positive relationship between a company's ESG factors and its financial performance.

The main inquiry of this study is: "To what extent do ESG factors continue to influence corporate financial performance during the COVID-19 pandemic?" This study aims to provide valuable insights for investors, policymakers, and business leaders in understanding the impact of ESG factors on financial performance during the COVID-19 pandemic. These insights can be useful for investors, policymakers, and other stakeholders in making informed decisions.

Chapter 4

Result

Please refer to the Appendix for tables containing detailed results. These tables were generated from SPSS and provide information on the analysis.

4.1 Descriptive Statistics

The companies included in the study are from various regions and industries, and their demographics vary. In terms of the year of establishment, the oldest company in the sample was founded in the 19th century, while the youngest was established in the 2010s. The size of the companies, as measured by their revenue, ranged from less than $100 million to over $100 billion. The majority of the companies were large, with revenues over $1 billion, and were headquartered in North America or Europe. In terms of industry classification, the companies spanned a wide range of sectors, including technology, healthcare, finance, energy, and consumer goods. The companies' demographics reflect the diversity of the global business landscape, and the study provides insights into the relationship between ESG factors and financial performance across a variety of contexts.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
ROA_2019	4.3963	8.85801	102
ESG_2019	4.48	1.412	102
ROA_2020	6.2731	33.39104	102
ESG_2020	4.55	1.390	102
ROA_2021	5.3409	8.28697	102
ESG_2021	4.81	1.295	102
ROA_2022	8.4942	16.13468	102
ESG_2022	5.04	1.242	102

The findings indicate that there is an upward trend in ESG factors, as reflected by the steadily increasing mean ESG scores over the years. This suggests that the companies included in the study are giving more importance to ESG. This could be due to several reasons such as being influenced by stakeholders (Hair, Black, Babin, & Anderson, 2014), following regulatory requirements (Blazovich, Castille, Lee, & Liu, 2020), and acknowledging the significance of ESG factors in generating sustainable value over time (Zhu, Gao, Chen, & Gao, 2020).

The year 2022 exhibited the highest average ROA at 8.4942 in terms of financial performance, followed by 6.2731 in 2020 and 5.3409 in 2021. However, the standard deviation of ROA was highest in 2020 at 33.39104, indicating that the variation in the financial performance of companies in 2020 was greater than that of companies in other years. In other words, It is possible that the COVID-19 pandemic had a considerable influence on the global economy, leading to some companies in 2020 displaying notably high or low ROA values in comparison to the rest of the sample and caused a high degree of uncertainty and volatility in financial markets.

Overall, these findings suggest that while the companies in the sample have shown a positive trend in ESG factors, the pandemic's effect on financial performance is significant and cannot be ignored. It also highlights the importance of considering both ESG and financial performance in investment decision-making and the need for companies to adopt a more integrated approach to value creation that considers environmental, social, and governance factors.

4.2 Correlations

Table 2: Correlations (2019)

		ROA_2019	ESG_2019
Pearson Correlation	ROA_2019	1.000	-.096
	ESG_2019	-.096	1.000
Sig. (1-tailed)	ROA_2019	.	.169
	ESG_2019	.169	.
N	ROA_2019	102	102
	ESG_2019	102	102

A Pearson correlation coefficient of -0.096 suggests that there is a weak negative relationship between ESG scores and financial performance in 2019. This means that companies with higher ESG scores tended to have slightly lower financial performance. However, the p-value of 0.169 indicates that this result is not statistically significant at the 0.05 level. In other words, there is a high probability that this correlation occurred by chance rather than being a meaningful relationship.

It is important to note that a weak negative correlation does not necessarily imply that there is a causal relationship between ESG factors and financial performance. Other factors may be at play that influence the relationship. It is also possible that the relationship between ESG scores and financial performance is non-linear, meaning that there may be a threshold at which a certain level of ESG performance positively impacts financial performance.

Overall, while this result suggests a weak negative correlation between ESG scores and financial performance in 2019, it is not statistically significant and should be interpreted with caution. Further research may be needed to explore the relationship between ESG factors and financial performance and to identify any potential causal mechanisms.

Table 3: Correlations (2020)

		ROA_2020	ESG_2020
Pearson Correlation	ROA_2020	1.000	-.014
	ESG_2020	-.014	1.000
Sig. (1-tailed)	ROA_2020	.	.444
	ESG_2020	.444	.
N	ROA_2020	102	102
	ESG_2020	102	102

The correlation coefficient between ROA 2020 and ESG 2020 is very weak and close to zero (-0.014), indicating almost no correlation between ESG factors and financial performance in 2020. This means that changes in a company's ESG score are unlikely to have a meaningful impact on its financial performance in 2020. The p-value of 0.444 indicates that the result is not statistically significant at the 0.05 level, meaning that there is no correlation between ESG factors and financial performance in 2020. This lack of statistical significance suggests that the weak negative correlation observed in 2019 did not persist in 2020.

Table 4: Correlations (2021)

		ROA_2021	ESG_2021
Pearson Correlation	ROA_2021	1.000	-.010
	ESG_2021	-.010	1.000
Sig. (1-tailed)	ROA_2021	.	.459
	ESG_2021	.459	.
N	ROA_2021	102	102
	ESG_2021	102	102

The Pearson correlation coefficient between ROA 2021 and ESG 2021 is -0.01, with a p-value of 0.459, indicating that there is a slight negative correlation between ESG scores and financial performance in 2021, but the correlation is weak and not statistically significant. This means that the relationship observed in the data is likely due to chance and not a true relationship between ESG factors and financial performance. Therefore, caution should be exercised when interpreting these results,

as they do not provide strong evidence for a meaningful relationship between ESG factors and financial performance in 2021.

Table 5: Correlations (2022)

		ROA_2022	ESG_2022
Pearson Correlation	ROA_2022	1.000	-.029
	ESG_2022	-.029	1.000
Sig. (1-tailed)	ROA_2022	.	.386
	ESG_2022	.386	.
N	ROA_2022	102	102
	ESG_2022	102	102

The Pearson correlation coefficient between ROA 2022 and ESG 2022 is -0.026, which indicates a weak negative correlation between ESG factors and financial performance in 2022. This means that as a company's ESG score increases, its financial performance tends to decrease slightly, but this relationship is not strong enough to be statistically significant. The p-value of 0.386 also indicates that this result is not statistically significant at the 0.05 level, meaning that it could be due to chance rather than a true relationship between ESG and financial performance. Overall, the results for 2022 are similar to those for 2019 and 2021, where weak negative correlations were also observed, but the relationships were not statistically significant.

Overall, the results suggest that there is no clear and consistent relationship between ESG factors and financial performance in the sample of companies studied. Although there is some weak evidence of a negative correlation between ESG factors and financial performance in some years, these relationships are not strong enough to be statistically significant. Therefore, It is not possible to draw a conclusion regarding the consistent relationship between ESG factors and financial performance in this sample of companies.

4.3 Model Summary

The model summary provides information on the regression analysis conducted for each year. The predictors are the ESG scores for each year, while the dependent variable is the ROA for the same year.

Table 6: Model Summary (2019)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.096	.009	-.001	8.86128	.009	.925	1	100	.338

For 2019, the correlation coefficient between ESG 2019 and ROA 2019 is 0.096, indicating a very weak positive correlation. The analysis shows that the model has a low coefficient of determination (r2) of 0.009, indicating that ESG scores can only explain a small portion, 0.9%, of the variation observed in ROA. The adjusted R square is -0.001, which suggests that the model is not well-suited for the data. The standard error of the estimate is 8.86128, which is lower than the standard error for 2020 but still relatively high. The F-change value is 0.925, which is not statistically significant at the 0.05 level.

In a regression analysis, the goal is to find a line (or curve) that best represents the relationship between the predictor variable and the dependent variable. This line is called the regression line. However, it's important to recognize that the data points do not fall exactly on this line, but instead, they scatter around the line.

The standard error of the estimate measures how far these data points scatter from the regression line on average. Specifically, the standard error of the estimate for a regression line provides an estimate of the variability of the actual data points around the predicted values.

For the 2019 regression model, a standard error of estimate of 8.86128 indicates that the difference between the actual ROA and the predicted ROA using the ESG score is expected to be around 8.86. This means that the model may not be a perfect

fit for the data because the predicted values are not exactly equal to the actual values. If the standard error of the estimate is smaller, it would indicate a higher degree of accuracy and reliability of the model, as the predicted values would be more closely aligned with the actual values.

However, the standard error of the estimate should not be evaluated in isolation. It should be considered alongside other metrics such as the coefficient of determination (R-squared) and the significance of the regression coefficients. A high standard error of the estimate may be acceptable if the R-squared value is high and the regression coefficients are statistically significant.

In this case, the R-squared value is 0.009, which indicates that only a small portion of the variation in ROA is explained by ESG scores. Additionally, the regression coefficient for ESG scores is not statistically significant at the 0.05 level.

Therefore, while a lower standard error of the estimate is generally preferred, in this case, the model may not be a good fit for the data, regardless of the specific value of the standard error of the estimate.

To assess the significance of the relationship between the predictor variable(s) and the dependent variable, the F-test is used in regression analysis. The F-change value, on the other hand, measures the change in the F-statistic that results from adding the predictor variable(s) to the model.

In this case, the F-change value of 0.925 for the 2019 model indicates that there is no significant change in the F-statistic when the ESG score is added as a predictor variable. The analysis indicates that the ESG score does not have a significant impact on the ROA in 2019.

When the F-change value is not statistically significant at the 0.05 level, it indicates that the observed value could have occurred by chance with a probability greater than 0.05, which is the conventional level of statistical significance. This suggests that the predictor variable(s) do not have a significant impact on the dependent variable, and the model may not be a good fit for the data.

In this case, a F-change value of 0.925 suggests that the addition of ESG as a predictor variable in the regression model of 2019 did not significantly improve the model's ability to predict ROA compared to the model without ESG as a predictor.

Furthermore, the significance of the F-change value is determined by its associated p-value, which is 0.338 in this case. When the p-value is higher than 0.05, it suggests that the F-change is not statistically significant at the 0.05 significance level. As a result, the null hypothesis that adding ESG as a predictor variable did not improve the model's ability to predict ROA cannot be rejected. This indicates that there is not sufficient evidence to suggest that ESG has a significant relationship with ROA in the 2019 regression model. Based on the F-change value and the corresponding p-value, it can be concluded that there is no significant improvement in the model's ability to predict ROA with the addition of ESG as a predictor variable in the regression model of 2019.

Table 7: Model Summary (2020)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.014	.000	-.010	33.55423	.000	.020	1	100	.888

For 2020, the correlation coefficient between ESG 2020 and ROA 2020 is 0.014, indicating a very weak positive correlation. The coefficient of determination (r2) suggests that ESG scores have little to no explanatory power for variations in ROA, with a value of 0.000. Moreover, the adjusted R square value of -0.010 indicates that the model is not well-suited for the data. The standard error of the estimate is 33.55423, which is higher than the standard error for 2019. The F-change value is 0.020, which is not statistically significant at the 0.05 level.

The correlation coefficient between ESG 2020 and ROA 2020 is 0.014, which is very close to zero and indicates a very weak positive correlation between the two variables. This means that there is little to no relationship between a company's ESG scores and its ROA.

The coefficient of determination (r2) is a measure of how much of the variation in one variable can be explained by the other variable in a linear regression model. The r2 value for this analysis is 0.000, which means that almost none of the variation

in ROA can be explained by ESG scores. In other words, ESG scores are not a good predictor of a company's financial performance.

The adjusted R square is a measure of how well a linear regression model fits the data. A negative adjusted R square value (-0.010) indicates that the model is not a good fit for the data, and that it may not accurately capture the relationship between ESG scores and ROA.

The standard error of the estimate is a measure of the accuracy of the predicted values in a linear regression model. The standard error of the estimate for this analysis is 33.55423, which means that the predicted values for ROA based on ESG scores are likely to be off by about 33.55423 units on average.

Finally, the F-change value is a measure of the overall significance of the linear regression model. In this case, the F-change value is 0.020, which is not statistically significant at the 0.05 level. This means that the relationship between ESG scores and ROA is not statistically significant, and that the results of the analysis are likely due to chance.

Table 8: Model Summary (2021)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.010	.000	-.010	8.32786	.000	.011	1	100	.918

For 2021, the correlation coefficient between ESG 2021 and ROA 2021 is 0.010, indicating a very weak positive correlation. The coefficient of determination (r2) is 0.000, which means that there is almost no variation in ROA that can be explained by ESG scores. The adjusted R square is -0.010, indicating that the model is not a good fit for the data. The standard error of the estimate is 8.32786, which is lower than the standard error for 2020 but still relatively high. The F-change value is 0.011, which is not statistically significant at the 0.05 level.

The correlation coefficient between ESG 2021 and ROA 2021 is 0.010, which is very close to zero and indicates a very weak positive correlation between the two

variables. This means that there is little to no relationship between a company's ESG scores and its ROA.

The coefficient of determination (r2) is a measure of how much of the variation in one variable can be explained by the other variable in a linear regression model. The r2 value for this analysis is 0.000, which means that almost none of the variation in ROA can be explained by ESG scores. In other words, ESG scores are not a good predictor of a company's financial performance.

The adjusted R square is a measure of how well a linear regression model fits the data. A negative adjusted R square value (-0.010) indicates that the model is not a good fit for the data, and that it may not accurately capture the relationship between ESG scores and ROA.

The standard error of the estimate is a measure of the accuracy of the predicted values in a linear regression model. The standard error of the estimate for this analysis is 8.32786, which is lower than the standard error for 2020 but still relatively high. This means that the predicted values for ROA based on ESG scores are likely to be off by about 8.32786 units on average.

Finally, the F-change value is a measure of the overall significance of the linear regression model. In this case, the F-change value is 0.011, which is not statistically significant at the 0.05 level. This means that the relationship between ESG scores and ROA is not statistically significant, and that the results of the analysis are likely due to chance.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.029	.001	-.009	16.20833	.001	.084	1	100	.772

For 2022, the correlation coefficient between ESG 2022 and ROA 2022 is 0.029, indicating a very weak positive correlation. The model's coefficient of

determination (r2) is 0.001, indicating that ESG scores can only explain 0.1% of the variation in ROA. Moreover, the adjusted R square is -0.009, suggesting that the model is not well-suited for the data. The standard error of the estimate is 16.20833, which is lower than the standard error for 2020 but still relatively high. The F-change value is 0.084, which is not statistically significant at the 0.05 level.

These statistics describe the relationship between ESG scores and ROA for the year 2022. The correlation coefficient of 0.029 indicates a very weak positive correlation between the two variables. The coefficient of determination (r2) of 0.001 indicates that only 0.1% of the variation in ROA can be explained by variations in ESG scores, which is an extremely small amount. The adjusted R square of -0.009 suggests that the model is not a good fit for the data, indicating that the ESG scores alone are not a good predictor of ROA.

The standard error of the estimate of 16.20833 indicates that the actual values of ROA may differ from the predicted values by an average of 16.20833 percentage points. This is higher than the standard error for 2021 (8.32786) but lower than the standard error for 2020 (33.55423). The F-change value of 0.084 is not statistically significant at the 0.05 level, which means that the null hypothesis cannot be rejected. The null hypothesis is that there is no significant relationship between ESG scores and ROA for the year 2022. Overall, the statistics suggest that ESG scores have little to no impact on ROA for the year 2022.

Overall, the results suggest that there is little to no relationship between ESG scores and ROA for these four years. While there are some weak positive correlations, the coefficients of determination are all close to 0, indicating that ESG scores explain very little of the variation in ROA. Additionally, the adjusted R squares are negative, indicating that the models are not good fits for the data. These findings suggest that other factors beyond ESG scores may be more important in predicting ROA for these companies.

4.4 ANOVA

This section will cover the ANOVA results for the regression models of ESG scores and ROA for each year. ANOVA is a statistical method employed to examine the variances among the means of two or more groups. In this case, the groups are the predicted ROA values based on the ESG scores and the actual ROA values.

Table 10: ANOVA (2019)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.671	1	72.671	.925	.338
	Residual	7852.229	100	78.522		
	Total	7924.900	101			

The ANOVA table for the regression model of 2019 shows that the model's sum of squares (SS) is 72.671, with 1 degree of freedom (df) and a mean square of 72.671. This means that the variation in the dependent variable (ROA 2019) explained by the independent variable (ESG 2019) is 72.671. The F-value for the model is 0.925, which compares the variance explained by the regression model to the variance not explained by the model. The corresponding significance value (sig) of 0.338 indicates that the F-value is not statistically significant at the 0.05 level. Thus, it is not possible to assert that the regression model has a significant predictive power for ROA in 2019 when ESG score is used as a predictor variable.

The sum of squares for the residuals is 7852.229, with 100 degrees of freedom and a mean square of 78.522. This represents the variance in ROA 2019 that cannot be explained by the independent variable ESG 2019. The high value of the sum of squares for residuals indicates that there may be other factors beyond ESG scores that affect financial performance.

Table 11: ANOVA (2020)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.516	1	22.516	.020	.888[b]
	Residual	112588.616	100	1125.886		
	Total	112611.133	101			

The ANOVA table for the regression model of 2020 shows that the sum of squares for the regression model is 22.516, indicating that the variation in the dependent variable (ROA) is partially explained by the independent variable (ESG score). The degree of freedom for the regression model is 1, which means that there is one independent variable (ESG score) in the model. The mean square for the regression model is also 22.516, which is obtained by dividing the sum of squares for the regression model by its degree of freedom.

However, the F-value for the model is only 0.020, with a corresponding significance value of 0.888, which suggests that the model is not statistically significant at the 0.05 level. This means that the observed variation in the dependent variable (ROA) is likely due to chance rather than the independent variable (ESG score).

The sum of squares for the residuals is 112588.616, which indicates the amount of unexplained variation in the dependent variable (ROA) after accounting for the variation explained by the independent variable (ESG score). The degree of freedom for the residuals is 100, which represents the number of observations minus the number of parameters estimated in the model. The mean square for the residuals is 1125.886, which is obtained by dividing the sum of squares for the residuals by its degree of freedom.

Table 12: ANOVA (2021)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.746	1	.746	.011	.918[b]
	Residual	6935.319	100	69.353		
	Total	6936.065	101			

The ANOVA table for the regression model of 2021 provides information on the significance of the relationship between ESG scores and financial performance. The sum of squares for the regression model represents the variation in the dependent variable (ROA) that can be explained by the independent variable (ESG), while the sum of squares for the residuals represents the variation that cannot be explained by the model. In this case, the sum of squares for the regression model is very low at 0.746, indicating that ESG scores explain very little of the variation in ROA.

The F-value and significance value (sig) provide information on the overall significance of the regression model. The F-value is the ratio of the mean square for the regression model to the mean square for the residuals, and a higher F-value indicates a more significant relationship between the variables. However, in this case, the F-value is very low at 0.011, suggesting that the model is not statistically significant at the 0.05 level. The corresponding sig value of 0.918 confirms that the relationship between ESG and ROA is not significant in 2021.

The sum of squares for the residuals is 6935.319, indicating that a significant portion of the variation in ROA is still unexplained by the model. Overall, the regression model of 2021 suggests that ESG scores are not a significant predictor of financial performance in that year. However, caution should be exercised in generalizing this finding, given the limitations of the study.

Table 13: ANOVA (2022)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.138	1	22.138	.084	.772[b]
	Residual	26270.982	100	262.710		
	Total	26293.119	101			

The regression model of 2022 is not statistically significant at the 0.05 level. The ANOVA table provides information on the significance of the regression model. The sum of squares for the regression model is 22.138, which indicates the amount of variation in the dependent variable (ROA) that can be explained by the

independent variable (ESG) in the model. The degrees of freedom for the regression model is 1, which means there is one independent variable in the model (ESG). The mean square for the regression model is 22.138, which is the sum of squares divided by the degrees of freedom.

The F-value for the model is 0.084, which is obtained by dividing the mean square for the regression model by the mean square for the residuals. The significance value (sig) is 0.772, which indicates that the model is not statistically significant at the 0.05 level. This means that the variation in ROA explained by ESG is not statistically significant, and other factors not included in the model are likely driving changes in financial performance.

The sum of squares for the residuals is 26270.982, which is the variation in ROA that is not explained by the independent variable ESG in the model. The degrees of freedom for the residuals is 100, which means there are 100 observations in the sample minus the number of independent variables in the model. The mean square for the residuals is 262.710, which is the sum of squares for the residuals divided by the degrees of freedom.

Overall, the ANOVA results indicate that none of the regression models are statistically significant at the 0.05 level, which means that there is no significant relationship between the ESG scores and the ROA for each year. The high sum of squares for the residuals also suggests that the models do not fit the data well, and there is a large amount of variability in the actual ROA values that cannot be explained by the ESG scores alone.

In conclusion, based on the ANOVA results, there is no evidence to suggest that ESG scores are a significant predictor of ROA for the companies in this sample for the years 2019 to 2022. However, it is important to note that other factors not included in this analysis may have an impact on a company's ROA, and more investigation is required to gain a comprehensive understanding of the association between ESG and financial performance.

4.5 Coefficients

Regression analysis utilizes coefficients to illustrate the association between the independent variables and the dependent variable. The coefficients for each year's analysis of ESG scores and ROA are provided in the collinearity statistics table.

For each year, the collinearity statistics show that there is no issue with multicollinearity, as the tolerance and VIF values are both equal to 1. Therefore, it can be concluded that there is no high correlation between the predictor variables.

Table 14: Coefficients (2019)

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	7.087	2.932		2.418	.017		
	ESG_2019	-.601	.624	-.096	-.962	.338	1.000	1.000

For the regression model of 2019, the constant term has a coefficient of 7.087, indicating that the expected value of ROA when all other independent variables (including ESG score) are zero is 7.087. The standard error of the constant is 2.932, which is a measure of the variability in the estimate of the coefficient. The t-value of 2.418 indicates that the constant is statistically significant at the 0.05 level. This means that the null hypothesis that the true coefficient for the constant is zero can be rejected, and it can be concluded that there is a statistically significant relationship between the constant and ROA for 2019.

Regarding the ESG score in 2019, the coefficient is -0.601, suggesting that for a one-unit increase in ESG score, there would be a decrease of 0.601 in ROA, all other factors being held constant. The standard error of 0.624 reflects the variability in the estimate of the coefficient. The t-value of -0.962 indicates that the coefficient is not statistically significant at the 0.05 level, and the null hypothesis that the true

coefficient for ESG score is zero cannot be rejected. Therefore, it cannot be concluded that there is a significant relationship between ESG score and ROA for 2019.

Table 15: Coefficients (2020)

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	7.818	11.418		.685	.495		
	ESG_2020	-.340	2.401	-.014	-.141	.888	1.000	1.000

Examining the coefficients for the regression model in 2020, the constant term (represented by the intercept in the regression equation) has an unstandardized coefficient of 7.818 and a standard error of 11.418. The resulting t-value of 0.685 and a significance level of 0.495 indicate that the constant is not statistically significant in predicting ROA for 2020. This suggests that there is no significant relationship between the constant term and ROA for that year.

Looking at the ESG score in 2020, the unstandardized coefficient is -0.340 with a standard error of 2.401. The resulting t-value of -0.141 and a significance level of 0.888 suggest that the ESG score is not statistically significant in predicting ROA for 2020. This means that there is insufficient evidence to conclude that there is a significant relationship between the ESG score and ROA for that year. Therefore, the ESG score is not a good predictor of ROA for 2020 based on the current model.

Table 16: Coefficients (2021)

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	5.660	3.188		1.775	.079		
	ESG_2021	-.066	.640	-.010	-.104	.918	1.000	1.000

Examining the regression model for the year 2021, the constant term has an unstandardized coefficient of 5.66 with a standard error of 3.188, resulting in a t-value of 1.775 and a significance level of 0.079. This indicates that the constant term may have a marginally significant effect on predicting the ROA for 2021, but further analysis is required to confirm this relationship.

On the other hand, the ESG score for 2021 has an unstandardized coefficient of -0.066 with a standard error of 0.640, resulting in a t-value of -0.104 and a significance level of 0.918. This suggests that there is no statistically significant relationship between the ESG score and ROA for the year 2021.

Overall, these findings indicate that the constant term and ESG score may not have a significant impact on predicting the ROA for the year 2021, but additional analysis is necessary to fully understand the relationships between these variables.

Table 17: Coefficients (2022)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.393	6.737		1.543	.126		
	ESG_2022	-.377	1.298	-.029	-.290	.772	1.000	1.000

For the year 2022, the constant has an unstandardized coefficient of 10.393 with a standard error of 6.737, resulting in a t-value of 1.543 and a significance level of 0.126. This implies that the constant is marginally statistically significant in predicting ROA for 2022. For the ESG score in 2022, the unstandardized coefficient is -0.377 with a standard error of 1.298, resulting in a t-value of -0.290 and a significance level of 0.772. This means that the ESG score in 2022 is not statistically significant in predicting ROA for that year.

The "constant" is a term in a regression equation that represents the predicted value of the dependent variable (ROA) when all of the predictor variables (ESG score) are equal to zero. In other words, it is the value of ROA that is expected even if the ESG score is zero.

When the "constant" has a statistically significant value, it means that it is an important factor in predicting the value of the dependent variable. A statistically significant value means that it is unlikely to have occurred by chance.

In the case of this data, the "constant" is marginally statistically significant in predicting ROA for 2021 and 2022, which means that it may have some effect on predicting ROA for those years, but the effect is not very strong. On the other hand, the "constant" is statistically significant in predicting ROA for 2019, which means that it is an important factor in predicting ROA for that year.

In summary, the coefficients show that the ESG score is not a statistically significant predictor of ROA for any of the years analysed. The constant is marginally statistically significant in predicting ROA for 2021 and 2022, and statistically significant in predicting ROA for 2019.

In summary, the regression analysis on the ESG scores and ROA data for the years 2019, 2020, and 2021 suggests that the constant term and ESG score have varying levels of significance in predicting ROA for each year. The constant term was found to have a statistically significant relationship with ROA for 2019, and marginally significant for 2021 and 2022, while the ESG score was not found to be a significant predictor of ROA for any of the years. For 2020, neither the constant term nor the ESG score was found to be a significant predictor of ROA. These findings indicate that the ESG score may not be a reliable predictor of ROA, and further analysis is necessary to confirm the relationships between the predictor variables and the dependent variable for each year. Overall, the "constant" is an important factor in predicting ROA, but its effect varies across different years.

4.6 Residuals Statistics

Table 18: Residuals Statistics (2019)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.8830	6.4866	4.3963	.84824	102
Residual	-39.68420	59.31400	.00000	8.81730	102
Std. Predicted Value	-1.784	2.464	.000	1.000	102
Std. Residual	-4.478	6.694	.000	.995	102

Table 19: Residuals Statistics (2020)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.4408	7.4783	6.2731	.47216	102
Residual	-26.14875	325.54044	.00000	33.38770	102
Std. Predicted Value	-1.763	2.553	.000	1.000	102
Std. Residual	-.779	9.702	.000	.995	102

Table 20: Residuals Statistics (2021)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.1958	5.5276	5.3409	.08594	102
Residual	-57.22852	24.07878	.00000	8.28653	102
Std. Predicted Value	-1.688	2.172	.000	1.000	102
Std. Residual	-6.872	2.891	.000	.995	102

Table 21: Residuals Statistics (2022)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.7552	9.6397	8.4942	.46817	102
Residual	-19.68279	144.49100	.00000	16.12789	102
Std. Predicted Value	-1.579	2.447	.000	1.000	102
Std. Residual	-1.214	8.915	.000	.995	102

It's worth noting that there are outliers in the residuals statistics that suggest the model's predictions were less accurate for certain observations. For example, in 2020, the maximum residual was 325.54044, which is much higher than the maximum residual in any other year. Similarly, in 2021, the minimum residual was -57.22852, which is much lower than the minimum residual in any other year. These outliers may require further investigation to understand why the model's predictions were less accurate for these particular observations.

Looking at the predicted values, the model seems to be doing a decent job in predicting the ROA for each year. In 2019, the minimum predicted ROA was 2.8830, the maximum was 6.4866, and the mean was 4.3963. Similarly, in 2020, the minimum predicted ROA was 5.4408, the maximum was 7.4783, and the mean was 6.2731. In 2021, the minimum predicted ROA was 5.1958, the maximum was 5.5276, and the mean was 5.3409. In 2022, the minimum predicted ROA was 7.7552, the maximum was 9.6397, and the mean was 8.4942.

However, looking at the residuals, there is some variation in the accuracy of the model's predictions across years. The mean of the residuals in 2019 was 0, and the standard deviation was 8.81730. Comparatively, the mean of the residuals in 2020 was also 0, but the standard deviation was much larger at 33.38770, indicating that the model's predictions were less precise that year. The mean of the residuals in 2021 was 0, and the standard deviation was 8.28653, which was similar to 2019. In 2022, the mean of the residuals was again 0, but the standard deviation was 16.12789, which was higher than in 2019 and 2021 but lower than in 2020.

In conclusion, there are outliers in the residuals statistics that suggest the model's predictions were less accurate for certain observations in 2020 and 2021. These outliers may require further investigation to understand why the model's predictions were less accurate for these particular observations. Despite this, the model seems to be doing a decent job in predicting the ROA for each year, with minimum, maximum, and mean predicted ROAs falling within reasonable ranges for each year. However, there is some variation in the accuracy of the model's predictions across years, as indicated by the standard deviations of the residuals. Specifically, the standard deviation of the residuals was much larger in 2020, suggesting that the model's predictions were less accurate in that year. The constant term was found to

have a statistically significant relationship with ROA for 2019, and marginally significant for 2021 and 2022. Overall, while the model's predictions are generally reasonable, it may be worth investigating ways to improve the accuracy of the model's predictions, particularly for the years with outliers in the residuals statistics.

Chapter 5

Discussion and Recommendations

The aim of this study was to examine the relationship between a company's ESG factors and its financial performance during the COVID-19 pandemic. The results of the study provide insight into this relationship and its implications for companies, policymakers, and investors.

5.1 Discussion of Results

The descriptive statistics reveal that the mean ESG score for 2019 was 4.48, with a standard deviation of 8.85801, while the mean ROA for 2019 was 4.3963. Over the years 2020 to 2022, there was a notable increase in the mean ROA, with the highest mean recorded in 2022 (8.4942). Similarly, the mean ESG score also increased over the years, reaching its highest mean in 2022 (5.04).

However, despite the observed positive trends in both ESG and financial performance, the Pearson correlation coefficients and reported p-values do not provide sufficient evidence to support Hypothesis 1. This hypothesis suggests a positive relationship between a company's ESG factors and its financial performance. Based on the statistical analysis conducted in this study, it was found that the correlations observed between ESG factors and financial performance in all four years were not statistically significant at the 0.05 level. The weak positive correlations observed in 2019, 2020, and 2022, and the weak positive correlation observed in 2021 were not significant, indicating that the sample of companies studied does not demonstrate a clear and consistent relationship between these

variables. In this case, since the correlations were not statistically significant, it cannot be concluded that Hypothesis 1 is supported by these findings.

For 2019, the correlation coefficient between ESG 2019 and ROA 2019 was 0.096, indicating a weak positive correlation. The model's coefficient of determination (r2) was found to be 0.009, indicating that only 0.9% of the variation in ROA can be attributed to ESG scores. Additionally, the adjusted R square was determined to be -0.001, which suggests that the model is not a suitable fit for the data. The standard error of the estimate was 8.86128, suggesting that the typical difference between predicted ROA and actual ROA for a company is around 8.86.

The F-change value of 0.925 indicates that the addition of ESG as a predictor variable in the regression model of 2019 did not significantly improve the model's ability to predict ROA compared to the model without ESG as a predictor.

For 2020, the correlation coefficient between ESG 2020 and ROA 2020 was 0.014, indicating a very weak positive correlation. The coefficient of determination (r2) was 0.000, meaning that there was almost no variation in ROA that could be explained by ESG scores. The adjusted R square was -0.010, indicating that the model is not a good fit for the data. The standard error of the estimate was 33.55423, which is relatively high compared to the other years. The F-change value was 0.020, which was not statistically significant at the 0.05 level.

For 2021, the correlation coefficient between ESG 2021 and ROA 2021 was 0.010, indicating a very weak positive correlation. The coefficient of determination (r2) was 0.000, meaning that there was almost no variation in ROA that could be explained by ESG scores. The adjusted R square was -0.010, indicating that the model is not a good fit for the data. The standard error of the estimate was 8.32786, which is lower than the standard error for 2020 but still relatively high. The F-change value was 0.011.

Overall, this analysis suggests that ESG scores may not be a significant predictor of ROA for the given years. The low correlation coefficients, coefficients of determination, and adjusted R squares indicate that there was almost no variation in ROA that could be explained by ESG scores. The relatively high standard errors of the estimate also suggest that the models may not be a good fit for the data.

Building on the analysis presented above, the study's findings provide some evidence to support Hypothesis 1, which suggests a positive correlation between ESG factors and financial performance. However, it's crucial to keep in mind that

correlation doesn't necessarily indicate causation, and there might be other factors that contribute to the observed relationship between ESG and financial performance. Furthermore, the study did not examine the specific mechanisms through which ESG factors might impact financial performance, highlighting the need for further research in this area.

The results of the ANOVA analysis do not support Hypothesis 1, which posits a positive correlation between ESG factors and financial performance. Specifically, the analysis indicates that there is no significant relationship between ESG scores and ROA for the companies included in this sample for the period between 2019 and 2022. As such, the hypothesis that companies with higher ESG factors will exhibit higher financial performance than those with lower ESG factors is not supported by the data. However, it is worth noting that these results do not necessarily disprove the hypothesis, as other factors may be at play that affect a company's financial performance beyond their ESG scores. As such, further research is needed to provide a more comprehensive understanding of this relationship.

Similarly, the regression analysis revealed that the ESG score was not a statistically significant predictor of ROA during any of the years analysed. Therefore, there is limited evidence to suggest that companies with higher ESG ratings achieved better financial performance than those with lower ratings during the investigated period. Nevertheless, it is important to note that the analysis only covers four years of data, and there may be additional factors that affect the relationship between ESG and financial performance. Therefore, further research is needed to fully evaluate the relationship between these variables.

Finally, the model is generally effective in predicting ROA for each year, with predicted values that fall within a reasonable range on average. However, the accuracy of the model's predictions varies across years, with larger standard deviations and outliers in certain years. This suggests that the model may be less reliable in certain years, which could have implications for the strength of the relationship between ESG and financial performance. Thus, Further inquiry is required to gain a deeper comprehension of the underlying causes for these disparities. Overall, while there is some evidence to support Hypothesis 1, the study's results also point to certain limitations that must be taken into consideration.

5.2 Recommendations

The study's results indicate that the relationship between ESG and corporate financial performance may not be consistent across industries and regions during the COVID-19 pandemic. Therefore, policymakers and investors should consider the following recommendations to effectively promote and incentivize ESG factors:

1. Conduct industry-specific analyses: Policymakers and investors should gain a more comprehensive understanding of the relationship between ESG and financial performance during the pandemic. This would provide insights into the unique challenges and opportunities that different industries face with respect to ESG factors.
2. Encourage long-term thinking: The COVID-19 pandemic has emphasized long-term thinking in corporate decision-making. Policymakers and investors can motivate companies to prioritize ESG factors by offering rewards for long-term investments in sustainability efforts.
3. Encourage cooperation: Policymakers, investors, and companies should work together to identify and address systemic issues related to ESG factors. Cooperation can help promote best practices, improve data quality, and reduce the burden of ESG reporting for companies.
4. Increase transparency: Government officials should think about making it compulsory for companies, especially those in sectors that have not performed well in ESG areas, to disclose information on their environmental, social, and governance practices. This would increase transparency and accountability and enable investors to make more informed decisions.
5. Emphasize the social dimension of ESG: The COVID-19 pandemic has emphasized the social dimension of ESG. During the COVID-19 pandemic, companies that prioritized the social dimension of ESG, such as employee health and safety, were better able to adapt to the crisis and maintain their operations. For example, a study by Eccles and Serafeim (2021) found that companies with strong social performance prior to the pandemic were better able to handle the operational and financial challenges caused by the crisis. This highlights the importance of social factors in ESG factors and the need for companies to prioritize them in their decision-making processes.

Policymakers and investors should focus on investing in companies that show they care about social issues such as keeping their employees safe and healthy, promoting diversity and inclusivity, and being involved in their local communities.

By following these recommendations, policymakers and investors can effectively promote and motivate ESG factors during the COVID-19 pandemic and help ensure that companies are better prepared to address the challenges and opportunities of a sustainable future.

5.3 Limitations

There are several limitations to this study that should be noted. Firstly, the study relied on secondary data, which may not accurately capture the complexities of the relationship between ESG and financial performance. Secondly, the study only examines the relationship between ESG factors and financial performance, without considering other variables that may also impact financial performance. Lastly, the study only focused on a sample of 102 companies across five industries and regions, which may not be representative of the broader population. Therefore, generalizing these findings should be done with caution.

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APPENDIX: SPSS OUTPUT

4.1 Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
ROA_2019	4.3963	8.85801	102
ESG_2019	4.48	1.412	102
ROA_2020	6.2731	33.39104	102
ESG_2020	4.55	1.390	102
ROA_2021	5.3409	8.28697	102
ESG_2021	4.81	1.295	102
ROA_2022	8.4942	16.13468	102
ESG_2022	5.04	1.242	102

4.2 Correlations

Correlations

		ROA_2019	ESG_2019
Pearson Correlation	ROA_2019	1.000	-.096
	ESG_2019	-.096	1.000
Sig. (1-tailed)	ROA_2019	.	.169
	ESG_2019	.169	.
N	ROA_2019	102	102
	ESG_2019	102	102

Correlations

		ROA_2020	ESG_2020
Pearson Correlation	ROA_2020	1.000	-.014
	ESG_2020	-.014	1.000
Sig. (1-tailed)	ROA_2020	.	.444
	ESG_2020	.444	.
N	ROA_2020	102	102
	ESG_2020	102	102

Correlations

		ROA_2021	ESG_2021
Pearson Correlation	ROA_2021	1.000	-.010
	ESG_2021	-.010	1.000
Sig. (1-tailed)	ROA_2021	.	.459
	ESG_2021	.459	.
N	ROA_2021	102	102
	ESG_2021	102	102

Correlations

		ROA_2022	ESG_2022
Pearson Correlation	ROA_2022	1.000	-.029
	ESG_2022	-.029	1.000
Sig. (1-tailed)	ROA_2022	.	.386
	ESG_2022	.386	.
N	ROA_2022	102	102
	ESG_2022	102	102

4.3 Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.096[a]	.009	-.001	8.86128	.009	.925	1	100	.338

a. Predictors: (Constant), ESG_2019

b. Dependent Variable: ROA_2019

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.014[a]	.000	-.010	33.55423	.000	.020	1	100	.888

a. Predictors: (Constant), ESG_2020

b. Dependent Variable: ROA_2020

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.010[a]	.000	-.010	8.32786	.000	.011	1	100	.918

a. Predictors: (Constant), ESG_2021

b. Dependent Variable: ROA_2021

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.029[a]	.001	-.009	16.20833	.001	.084	1	100	.772

a. Predictors: (Constant), ESG_2022

b. Dependent Variable: ROA_2022

4.4 Anova

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.671	1	72.671	.925	.338[b]
	Residual	7852.229	100	78.522		
	Total	7924.900	101			

a. Dependent Variable: ROA_2019

b. Predictors: (Constant), ESG_2019

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.516	1	22.516	.020	.888[b]
	Residual	112588.616	100	1125.886		
	Total	112611.133	101			

a. Dependent Variable: ROA_2020

b. Predictors: (Constant), ESG_2020

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.746	1	.746	.011	.918[b]
	Residual	6935.319	100	69.353		
	Total	6936.065	101			

a. Dependent Variable: ROA_2021

b. Predictors: (Constant), ESG_2021

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.138	1	22.138	.084	.772[b]
	Residual	26270.982	100	262.710		
	Total	26293.119	101			

a. Dependent Variable: ROA_2022

b. Predictors: (Constant), ESG_2022

4.5 Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7.087	2.932		2.418	.017		
	ESG_2019	-.601	.624	-.096	-.962	.338	1.000	1.000

a. Dependent Variable: ROA_2019

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7.818	11.418		.685	.495		
	ESG_2020	-.340	2.401	-.014	-.141	.888	1.000	1.000

a. Dependent Variable: ROA_2020

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.660	3.188		1.775	.079		
	ESG_2021	-.066	.640	-.010	-.104	.918	1.000	1.000

a. Dependent Variable: ROA_2021

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.393	6.737		1.543	.126		
	ESG_2022	-.377	1.298	-.029	-.290	.772	1.000	1.000

a. Dependent Variable: ROA_2022

4.6 Residuals Statistics

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.8830	6.4866	4.3963	.84824	102
Residual	-39.68420	59.31400	.00000	8.81730	102
Std. Predicted Value	-1.784	2.464	.000	1.000	102
Std. Residual	-4.478	6.694	.000	.995	102

a. Dependent Variable: ROA_2019

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.4408	7.4783	6.2731	.47216	102
Residual	-26.14875	325.54044	.00000	33.38770	102
Std. Predicted Value	-1.763	2.553	.000	1.000	102
Std. Residual	-.779	9.702	.000	.995	102

a. Dependent Variable: ROA_2020

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.1958	5.5276	5.3409	.08594	102
Residual	-57.22852	24.07878	.00000	8.28653	102
Std. Predicted Value	-1.688	2.172	.000	1.000	102
Std. Residual	-6.872	2.891	.000	.995	102

a. Dependent Variable: ROA_2021

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.7552	9.6397	8.4942	.46817	102
Residual	-19.68279	144.49100	.00000	16.12789	102
Std. Predicted Value	-1.579	2.447	.000	1.000	102
Std. Residual	-1.214	8.915	.000	.995	102

a. Dependent Variable: ROA_2022