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**The Relationship Between Environment, Social and
Governance and Firms' Performance: Evidence from Oil &
Gas Companies**

A Thesis Submitted in Partial Fulfilment of the Requirements for the master's degree in
Accounting

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Abstract

The aim of this study is to examine the impact of the environmental, social, and governance (ESG) disclosures on the firm's profitability and valuations of oil and gas companies in European Union countries and the Middle East countries. Based on the stakeholder theory, this study examined the impact of ESG factors on financial performance for 41 oil and gas companies operating in Europe and the Middle East during the period 2013-2022. Using multivariate regression models and panel data techniques several key findings emerge, including that companies with higher ESG scores show better financial performance, as measured by ROA and Tobin's Q. The profitability and market valuation of firms with sound ESG practices are enhanced. It is also found that various components of ESG and financial outcomes are associated with distinct relationships. While environmental factors show a negative association with ROA and Tobin's Q, social commitment scores demonstrate a positive association with ROA and firm valuation also corporate governance emerges as largest contributing factor positively impacting ROA. Additionally, this study underlines the relevance of understanding contextual factors such as firm size and financial leverage. The study found that firms with higher financial leverage have lower ROA, but the adverse effects diminish as the firm expands, underscoring the nuanced nature of these relationships. Taking a holistic view, this study shows that ESG considerations significantly influence the financial performance of the oil and gas firms. This study, which offers valuable insights for practitioners, policymakers, and investors alike, adds to the evolving body of literature on

ESG and financial performance. By developing a more comprehensive understanding of the dynamic factors involved, it provides a basis for establishing responsible and sustainably run operations in the oil and gas industry. This study endeavors to identify opportunities to improve performance for firms operating within the Oil and Gas sector by evaluating the importance of ESG practices and disclosures in the contemporary landscape of the industry. By providing insights into how oil and gas companies prioritize social responsibility initiatives, the findings of this study will be beneficial to a variety of stakeholders, including management and retail investors.

Keywords: Environmental, Social and Governance, Financial Performance, Firm Valuation, Europe, Middle East

DEDICATION

First and foremost, I want to thank Allah for providing me the patience, perseverance, and strength to accomplish my thesis. This job would not have been accomplished without the help of numerous people, whom I want to thank.

I would want to dedicate my thesis to my dear parents. Their wishes for my success and unconditional love helped me complete this work. They were the first to believe in me and stuck by my side every step of the way while I worked for my goals. There aren't enough words to describe my gratitude to my parents; without their support, advice, and inspiration, I wouldn't be the person I am today.

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(iii) List of Abbreviation

Abbreviation	Explanation
ADF	Augmented Dickey–Fuller Test
AT	Asset Turnover
BESG	Bloomberg Environmental, Social, And Governance
BRICS	Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, and the United Arab Emirates.
CECD	Corporate Environmental Commitment Disclosure
CGS	Corporate Governance Score
CmbESG	ESG Combined Score
CO ₂	Carbon Dioxide
CRISIL	Credit Rating Information Services of India Limited
CSR	Corporate Social Responsibility
E&S	Environmental & Social
EGX	The Egyptian Exchange
ESG	Environmental, Social, And Governance
EVS	Environment Score
GHG	Greenhouse Gases
GM	General Motors
GMM	Generalized Method of Moments
IEA	International Energy Agency
INVEST	Capital Investment
KRX	Korea Exchange
LEV	Financial Leverage
MENA	Middle East and North Africa
ROA	Return On Assets
ROE	Return On Equity
S&P	Standard And Poor's
SASB	Sustainability Accounting Standards Board
SCS	Social Commitment Score
SEC	Securities And Exchange Commission
SIZE	Firm Size
SLS Model	Standard Linear Solid Model
TQ	Tobin Q
VIF	Variance Inflation Factor

Chapter One: Introduction of the study

1.1 Introduction

The increasing interest from stakeholders and elevated global awareness regarding the risks associated with environmental, social responsibility, and governance aspects are exerting substantial pressure on firms, especially oil and gas industries, to broaden their scope to non-financial aspects of their operations. Generally, investing is undertaken with the chief objective of ensuring that the investment realizes returns. However, there is a global trend when it comes to investing sustainably to reduce the environmental impact while enhancing the conditions of the society around the corporate operating space. Considering these revelations, stakeholders including sponsors, employees, contractors, consumers, and governments are gradually echoing the notion of sustainable business. Companies should, therefore, observe due diligence while reporting to comply. This implies that firms need to evaluate to what extent the investments and resources required for sustainability initiatives accomplish financial goals by making a direct contribution to its performance.

Given the above, the primary objective of this study is to investigate the underlying relationship between environment, social and governance(ESG) commitments and firm's financial performance. Namely, the relationship between ESG scores and the company's fiscal indicators will be assessed. The target variables in the current study are Return on Assets and Tobin's Q. Considering Return on Asset , it is one of the most widely used items to assess whether the firm makes a profit. Tobin's Q was created by James Tobin and is known as the ratio of a firm's market value to its replacement cost. Both

metrics are popular tools for measuring financial performance and, therefore, are highly relevant to determining the extent to which non-financial factors, ESG included, affect a company's financial results.

This study hopes to provide insight into how various ESG initiatives rank in terms of impact on financial performance, aiming to understand the degree to which corporate investment in sustainability affects overall financial performance in the benefit of the oil and gas industry. This study motivates the need for empirical analysis and presents the framework for comprehensive data analysis, which, when complete, would make it possible to identify the financial implications of ESG and incorporate them into strategic planning in the oil and gas sector.

Firms commitments and initiatives towards ESG and their compliance scores have evolved beyond mere metrics; they now constitute a fundamental component of firms' corporate strategies. Recognizing their significance, global institutions like the United Nations have advocated for responsible practices to achieve environmental and societal goals van Zanten & van Tulder (2018). This has spurred firms worldwide to integrate actions aimed at environmental preservation, labor rights enhancement, and gender equality into their strategies. The market now evaluates firms based on their contributions to environmental protection, gender equality, and labor rights. Consequently, ESG factors have become instrumental in disseminating responsible practices across industries Giannarakis et al., (2014). Conversely, non-responsible practices are scrutinized through the lens of ESG conducts, further emphasizing the industries emphasis on ethical conduct. Recent discourse has led to a deeper understanding of how ESG and ESGC indices impact companies' Corporate Financial Performance in various sectors. This

has prompted controversial industries like energy, notably oil and gas, to mitigate their environmental footprint due to increasing awareness of climate change repercussions.

The oil and gas industry, which accounts for 62% of energy-related emissions, is under unprecedented pressure from activists and government entities to reduce the negative impacts. Given that 56% of the world's energy consumption comes from fossil fuels, it is crucial for oil and gas companies to put greater effort into emission reduction and resource efficiency to fall in line with global goals, such as the 2030 Agenda and the European Union's Sustainable Development Goals Rodríguez-Antón et al., (2022). Apart from mere regulatory requirements, Corporate Social Responsibility has become a major factor influencing firms' economic-financial appraisal and investment determination. The oil and gas industry faces a serious challenge, especially with the urgency of ESG reporting, and environmental performance, in particular. Over the past years, market stakeholders and buyers began to penalize, on the market, the oil and gas firms that engage in socially or environmentally damaging behavior, reinforcing, therefore, market forces for ESG disclosure. Thus, ESG factors are no longer independent metrics for oil and gas companies and are forcefully included in strategic priorities. In other words, market demands for sustainable practices encouraged firms to engage in ESG reporting focusing on environmental sustainability, social responsibility, and governance transparency. Thus, ESG reporting shapes the market's attitude and therefore affects investment commitments Rau & Yu, (2024).

1.1.1 ESG and Its Relevance to Oil and Gas Sector

Amidst growing societal concerns regarding climate change, investors are increasingly utilizing environmental, social, and corporate governance (ESG) structures and policies to assess their investment portfolios. This intensified expectation is especially explicit within the oil and gas industries, which contributes about 9 percent and implicitly to an extra 33% of global greenhouse gas emissions Okeke, (2021). Despite advancements in technology, many oil and gas companies remain deemed unqualified in the imminent and long term with the global push towards reducing reliance on fossil fuels and achieving rapid decarbonization. However, there exists a noticeable disparity between decarbonization ambitions and the current reality, with aspirations for decarbonization expanding while demand for fossil fuels remains robust, if not increasing, in various regions worldwide. The publication of 'Net Zero by 2050' by the International Energy Agency has attracted significant attention, emphasizing the necessity of ceasing approval for new oil and gas field developments from 2021 onwards to achieve net zero emissions by 2050 (Shideler & Hetzel, 2021).

Nonetheless, recent events, such as the International Energy Agency 's advocacy for amplified fossil gas consignments from Russia to the European Union to address the inflated gas prices and appeals from the US to Organization of the Petroleum Exporting Countries to boost oil supply to mitigate rising domestic gasoline prices, underscore the continued demand for hydrocarbons, which may persist for the foreseeable future. Given the assumption of continued, and potentially growing, oil and gas production, there arises an urgent imperative to substantially enhance the environmental impact of production, transportation, storage, and consumption processes. The burgeoning oil and gas production in the US, coupled with its aspiration to

lead global climate initiatives, renders the decarbonization of its oil and gas sector of paramount importance. Nevertheless, the United States financial sector and its regulatory bodies are only beginning to fasten with the implications of climate change and the sustainable energy on their investments and finances in the petroleum industry. While some progress has been made, such as Morgan Stanley's pledge to achieve zero funded emissions in the next 30 years, disclosure regulations for ESG issues and climate risks among most of the US companies remain lacking In & Schumacher, (2021).

Concurrently, there is a surge in investor demand for ESG performance reporting, leading to a complex and inconsistent ESG landscape replete with unsubstantiated claims of enhanced sustainability and social performance. While forthcoming SEC proposals for additional compliance regulations on climate change and ESG risks may address some of these challenges, there remains a dearth of comprehensive understanding regarding what constitutes effective ESG practices, particularly for upstream oil and gas companies. Moreover, the absence of robust and consistent standards for reporting greenhouse gas emissions and managing associated risks further compounds the complexity of the ESG landscape within the oil and gas sector Oliver Yébenes, (2024). Given the capital-intensive nature of the industry and its significant contribution towards global economy(3% of GDP) the future trajectory of the oil and gas industry hinges significantly on the preferences of investors regarding climate performance expectations from producers. While some investors have determined to divest oil and gas altogether, the overall influence of such a withdrawal from the oil and gas sector due to emissions remains matter of argument. It can be argued that meaningful engagement with the sector may yield greater efficacy in improving practices

and substantially reducing greenhouse gas emissions, considering the persistent demand for oil and gas resources.

1.2 Research Problem

Companies across the world voluntarily adopt ESG practices within their business to showcase their commitment towards society and nature. This interest from the corporate is mainly due to the underlying expectation of return in terms of their brand image and market value. The implications of ESG engagement have been significantly examined by academicians and professional practitioners with particular focus on their impact on financial performance, market risk, and corporate capital.

Though numerous theoretical frameworks have been consulted in the course of these investigations, stakeholder theory and agency theory remain largely utilized in academic research. Stakeholder theory advocates that prolific organizations complement all stakeholders' interests through improving sustainability Di Gangi et al., (2023). Thus, the idea of stakeholder theory posits that shareholder wealth is not the only point of focus, but the interests of other stakeholders are also taken into consideration. Whereas the other prominent theory, namely agency theory suggests that the ESG commitments within an organization may reflect dysfunctional agency processes. Investments in environmental, social, and governance proposals may benefit managers who act as agents opening the debate on earnings management issues Sáenz González & García-Meca, (2014). ESG initiatives are highly important in industries with inherent hazards which mainly concern environmental and social issues. Thus, considering the long-term risk factors towards nature and society it is important for the companies to make significant investment towards sustainable business practices. The pressure

in this regard may be less pronounced in services sectors, especially within services sectors while the magnitude of implications is more on manufacturing industries.

The oil and gas industry are one such sector largely experiencing increased scrutiny and is a prime example of the importance of ESG engagement. As a result of their significant environmental and societal impact oil and gas companies are always under the tight radar of investors, regulators, environmentalists, and the public. Firms in these sectors have been forced to implement more rigorous sustainability policies in order to comply with international initiatives such as the Paris Agreement and the Sustainable Development Goals. The increasing attention towards ESG tremendously influences the corporate strategy making them viable to foster sustainable business practices. Therefore studies aid to contribute to a better understanding on how ESG affecting the financial and operational outcomes within the Oil and Gas industries.

Due to its substantial environmental impact, the oil and gas industry stands as one of the principal suppliers of current energy production. Therefore, oil and gas companies are subjected to increased scrutiny from a variety of stakeholders, including investors, governments, ecologists, and the public. As a result of this scrutiny, companies have implemented policies and regulations regarding sustainability to reduce their negative effects on the environment. It underscores the sector's recognition of its role in combating environmental and social challenges through global initiatives such as the Paris Agreement and the Sustainable Development Goals. It has become increasingly prevalent for companies and investors to incorporate issues related to Environmental, Social, and Governance into their management resolution processes. This shift

has prompted scholarly discourse regarding the effect of ESG practices and initiatives on corporate worth and profitability. While previous studies predominantly focused on the influence of corporate governance on stock price performance, recent research Ahmadi & Bouri, (2017); Cao et al., (2023); Pástor & Pietro, (2003) has expanded to explore the relationship linking sustainable initiatives and stock market performance. Moreover, the 2020 global epidemic has brought renewed attention to the influence of altering demographics and societal concerns on stock market performances, through an accent on health, safety, wellbeing, and human capital management.

Despite the growing body of research studying the correlation amongst ESG factors and stock market yields, risk management empirical studies that comprehensively address the interaction concerning the collective role of environmental social and governance on firm profitability and valuation remain scarce therefore, this study will address the shortcoming of the prior research. The objective of this study is to analyze the influence of ESG dimensions on the value and profitability of the oil and gas companies. While recent studies have predominantly reported positive outcomes regarding the relationship among ESG and firm profitability, conflicting findings exist, supporting the Shareholder theory's assertion that firms primarily aim to amplify investor earnings. This study aims to fill the gaps in previous literature by examining the relationship between financial variables and the environmental, social, and governance index specifically tailored to the oil and gas industry.

1.3 Research Question

This study endeavors to evaluate the relationship between ESG commitment scores and monetary performance among companies listed in selected European Union countries and the Middle East. The objective is to ascertain whether companies exhibiting higher ESG performance demonstrate superior financial performance. ESG practices have garnered significant attention from scholars, business practitioners, and regulators in recent years. Despite numerous studies examining the value relevance of ESG practices, findings remain inconclusive, with the bulk of research focusing on firms in Western nations. Limited research has been conducted in emerging markets, particularly in the Middle East. The Middle East region presents a distinct institutional context characterized by unique cultural attributes, weak shareholder protection and legal enforcement, deficient corporate governance mechanisms, and high ownership concentration. Moreover, ESG practices in the Middle East region are less developed compared to Western countries, rendering it a pertinent area for exploration. In recent years, the world has witnessed escalating climate challenges, prompting urgent calls for behavioral changes to mitigate their impact. The oil and gas sector confronts significant challenges pertaining to emission reduction and ensuring adequate energy supply amidst escalating demand for sustainable energy.

According to McKinsey (2019), the oil and gas industry is poised to play a pivotal role in future energy provision and heating systems. However, companies operating in this sector often face public scrutiny and are labeled as significant contributors to carbon emissions and environmental degradation. Notable incidents such as the Deepwater Horizon disaster and environmental pollution incidents underscore the sector's environmental risks

and challenges. Nonetheless, companies within the sector have made strides in environmental and social disclosure, driven by regulatory requirements, and increasing pressure to address climate challenges through research, development, and innovation. The overarching aim is to support the existing body of research on the association involving ESG implementation score and economic performance of Oil and Gas firms and discern whether a significant association exists. Notably, this thesis seeks to differentiate itself from prior research by incorporating comparative elements across different time periods, geographic regions, and between ESG leaders and non-ESG leaders. Prior studies Aboud & Diab, (2019); Ahmadi & Bouri, (2017); Qiu et al., (2016); Singh et al., (2023) have demonstrated that engaging in non-financial reporting can positively impact a firm's financial performance, although the extent of this impact may vary across industries.

While some studies Doni et al., (2022); Ismail et al., (2018); Kaupke & zu Knyphausen-Aufseß, (2023); Okeke, (2021); Ramírez-Orellana et al., (2023) have explored the relevance of ESG on fiscal performance within the oil and gas industry, these have primarily focused on emerging markets. While several studies Aboud & Diab, (2019); El Khoury et al., (2023); Giannarakis et al., (2014); Rezaee & Tuo, (2017) have identified a positive association linking environmental and social disclosure against financial performance, few have explored the reverse correlation. This study aims to narrow this gap by verifying the financial performance implications on ESG and vice versa, offering a concrete understanding by disaggregating ESG to analyze the impact of each pillar through respective scores derived from Bloomberg ESG scoring methodology. The motivation behind this study lies in gaining comprehensive insights into companies operating within the oil and gas

sector, given their significant influence on climate challenges and societal well-being. While these companies are compelled to meet governmental demands, it is pertinent to explore whether increased engagement in ESG practices yields benefits for corporations.

Drawing from prior literature, this study aims to address the gaps in understanding the association amongst ESG scores and firm performance, particularly within European and Middle Eastern oil and gas sectors. Despite conflicting findings across various countries and industries, the prevailing trend leans towards an explicit relationship concerning ESG scores with company profitability and valuation. However, there remains a dearth of research on this topic within the specified context. To bridge this gap, the research questions posed below will be explored, employing ROA and Tobin's Q as metrics for corporate performance evaluation.

The primary inquiry of this study is articulated as follows:

To what extent do Environmental, Social, and Governance scores influence the profitability and valuation of firms operating in the Oil and Gas sector?

The study investigates how the distinct pillars of ESG affect firms' performance, providing awareness into the varying impacts of each dimension on financial outcomes.

1.4 Research Objectives

The primary purpose of this study is to examine the relationship between ESG disclosures and profitability and valuations of oil and gas companies in European Union countries and the Middle East countries. Furthermore, the research seeks to contribute to the discourse surrounding ESG considerations

by exploring the potential positive association of ESG initiatives on their monetary performance. This prospective correlation is anticipated to incentivize improvements in ESG-related practices within the Oil and Gas sector. Given the substantial contribution of the oil and gas industry to global emissions, the Oil and Gas sector assumes a pivotal role in combating climate change. Consequently, delineating the association involving firm performance and ESG factors has garnered Pástor & Pietro, (2003); Pinheiro et al., (2024) increasing interest in recent times. Whereas some prior research such as have suggested a promising impact of ESG initiatives and their scores on fiscal performance and firm valuations, the existing literature presents inconclusive findings regarding the negative correlation between financial achievement and ESG scores.

1.5 Research Significance

Research has focused on the association between ESG performance and financial stability within petroleum companies, garnering increasing interest from scholars over the past few years. While literature reviews generally indicate a positive connection amongst three pillars of ESG and financial health indicators across various studies, a closer examination of the extensive literature reveals a more nuanced landscape of findings. Different studies Aboud & Diab, (2019); Cao et al., (2023); Giannarakis et al., (2014); Oliver Yébenes, (2024); Pástor & Pietro, (2003); Pinheiro et al., (2024); Qiu et al., (2016); Rodríguez-Antón et al., (2022); Singh et al., (2023) have reported positive, negative, and non-significant relationships between ESG disclosures and financial indicators such as Return on Assets (ROA) and Tobin's Q. This variation in results can be attributed, at least in part, to the diverse methodologies, proxies, and sample characteristics employed in different

studies, leading to considerable uncertainty regarding the profitability of prioritizing ESG initiatives for both corporate managers and investors. Despite the prevailing belief, driven by regulatory and societal pressures, that sustainable practices translate into financial success, empirical research has not consistently validated this assumption. Consequently, firm leaders and investors may hesitate to fully commit to sustainable strategies until a clear and consistent positive impact on financial performance is demonstrated.

Given the urgent sustainability challenges facing society today, redirecting private capital toward environmentally and socially responsible companies is imperative. Therefore, there is a pressing need for additional research to throw light on the complex association between ESG performance and financial outcomes, thereby fostering a more informed understanding of the potential benefits and risks associated with sustainable business practices. The underlying dynamics of the ESG-performance relationship need to be further investigated. After the global financial crisis of 2008, there has been an increased emphasis on corporate sustainability, corporate social responsibility (CSR), and ESG integration. Researchers may interpret results significantly differently today than they did a decade ago due to the evolving regulatory landscape. Thus, longitudinal studies will provide knowledge about how ESG performance has evolved over time. Oil & gas industry performance has been linked to environmental, social, and financial factors to satisfy these demands.

A key objective of this study is to clarify the drivers and implications of sustainable business practices, thereby assisting decision-makers in determining the best course of action and contributing to advancing sustainable and responsible corporate behavior in the oil and gas industry and similar industries.

1.6 The Structure of the Study

This study is organized into five chapters to systematically explore the relationship between Environmental, Social, and Governance (ESG) performance and financial performance within the oil and gas industry in selected European Union countries and the Middle East. An overview of the background, objectives, and relevance of the research is presented in Chapter one, which serves as an introduction to the study. A brief definition of the study's objectives is presented, followed by a discussion of ESG initiatives and financial performance. A detailed analysis of the selected regions and their oil and gas sectors is presented in chapter one, which offers context and setting for the study. In addition to providing an overview of the regulatory environment, market dynamics, and ESG practices in these regions, it also offers insights into their future.

An overview of existing literature on ESG and financial performance, especially within the oil and gas industry, is presented in chapter two. The purpose of this chapter is to provide a theoretical framework and hypotheses based on existing knowledge so that empirical analysis can be conducted.

A discussion of the methodology of the study is given in chapter three, including data collection and processing, variable measurement, and the analysis techniques used. It outlines the research design and approach to test the hypotheses and achieve the study's objectives.

In chapter four, the results of the study are presented which includes the descriptive analysis, correlation, and regression analysis which highlights the relationship between ESG disclosures and firms' profitability and valuations.

At the end of chapter five, the key findings and implications of the study are summarized, their implications are discussed, and recommendations are provided for future research and industry practices. A summary of the limitations of the study is also provided, as well as suggestions for future research.

Chapter Two: Literature Review and Hypotheses Development

2.1 Introduction

As part of the study, this chapter provides a detailed theoretical understanding of the topic under discussion. Special emphasis is placed on how ESG aspects influence the economic viability of European and Middle Eastern oil and gas companies. As a means of gaining a deeper comprehension of the impact of ESG factors on corporate profitability, this section will examine relevant theories and theoretical models. As viewed within the framework of European and Middle Eastern economies, this chapter aims to provide an understanding of how ESG aspects of the oil and gas sector have evolved over time.

The subject of enquiry of the current study is to test the influence of firm's initiatives in ESG practices measured by corresponding scoring on the financial performance of firms which do business in the oil and gas sector. 'The escalating attention from stakeholders and sensitive global consciousness concerning the risks associated with environmental considerations, alongside other non-fiscal aspects such as social accountability and governance practices, exerts a gripping push upon firms to strengthen their endeavors and concentration on the non-monetary dimensions within their businesses. Organizations systematically disclose their risk-related performance across three primary categories, namely Environment, Social, and Governance (ESG) Santamaria et al., (2021b). Nevertheless, viewed from the organizational standpoint, proactive engagement in addressing these issues necessitates substantial investments thus raises the question of profitability. In the realm of deductive research, a positive

approach is instrumental, particularly in the analysis of ESG factors. Engaging quantitative research methods within this framework permits for systematic data collection and empirical analysis, often enabled through the deployment of panel data.

This approach proves valuable when investigating the dynamics of ESG metrics across diverse contexts, such as European countries and the Middle East. By embracing a deductive positivist stance, researchers can discern patterns, draw generalizable conclusions, and contribute to a more comprehensive understanding of the multifaceted relationships within the ESG landscape across these regions. Given the objective of examining the association between ESG scores and financial performance, a quantitative approach aligns with our research goals Blomkvist and Hallin, (2015)'. To render the research question investigable, we adopt an explanatory research design, intending to uncover correlations between potential causes and effects. As emphasized by Koch et al., (2014), the selection of a research design hinges on identifying the empirical material that aids in comprehending the studied phenomenon. Our research question revolves around determining whether sustainable investments, specifically firms with high ESG deliverance scores, demonstrate greater financial stability in contrast to those with depleted commitment towards ESG practices. To elucidate verify this matter, we have combined various forms of empirical data, encompassing financial metrics and ESG scores, as our explanatory variables.

Ahmad et al., (2021); Mardini, (2022); Zhou et al., (2022) Numerous researchers have explored the correlation between ESG factors and a firm's financial performance. Although contemporary studies predominantly reveal positive outcomes, a substantial body of literature also presents negative

results Friede et al., (2015); Naimy et al., (2021). These findings align with the Shareholder theory, positing that a firm's primary aim is profit maximization for shareholders. The current study engages in the ongoing debate with data ESG data captured from Bloomberg database which encompasses 15,000 companies across more than hundred nations. The database includes annual reports, financial ratios, and metrics pertaining to the industrial sector and country, with records extending back to the year 2006. Bloomberg furnishes an array of proprietary scoring mechanisms, affording investors the capability to evaluate the disclosure and performance of companies or governmental entities across diverse Environmental, Social, and Governance (ESG) and thematic dimensions.

This chapter presents the main concepts, arguments and theories related to ESG and corporate profitability. In addition, it presents the previous studies, which examined the relationship between ESG disclosure and the financial performance of Oil and Gas companies also, it develops the study hypotheses.

2.2 Evolution of ESG Reporting

ESG parameters are largely influenced by the Global Reporting Initiative (GRI) which is targeted to promote the stabilization of sustainability principles(Kaupke & zu Knyphausen-Aufseß, 2023). (de Villiers et al., 2022)highlights the IFRS/ISSB proposal to establish international sustainability reporting standards. Despite its target to distinguish its methodology from the Global Reporting Initiative, the IFRS is unlikely to reduce the GRI's role in establishing multi-stakeholder-oriented ESG disclosure standards(Zaid & Issa, 2023). IFRS proposes significant focus on financial viability whilst GRI stresses more on the importance of sustainability. Considering views of both financial materiality and

sustainability stress a news system of reporting was the need of investors and regulators eventually leading to the formation of ESG disclosure mechanism. The nexus of corporate social responsibility(CSR) with monetary performance studies has been conducted in developed countries over the past 40 years. Although a few researchers using data from emerging economies disputed this conclusion, most of these studies found that social responsibility positively correlates with financial performance. The association between social responsibility and financial performance is unclear among emerging market companies. Many studies conducted with developing-country companies revealed divergent results from those from developed-country companies. According to X. Liu & Anbumozhi, (2009) economic performance does not appear to be significantly influenced by environmental disclosure activity in 175 Chinese listed companies. The results were in line with those obtained by Garcia et al., (2017), which evaluated the ESG performance of 365 publicly traded firms of BRICS nations. A country's institutional framework and monetary factors influence the nature and degree of ESG adoption Dobers & Halme, (2009). When compared to developed countries, political factors and socioeconomic conditions seem to explain the performance differences more effectively.

Sustainability involves maximizing positive impacts and minimizing negative ones in social, environmental, and economic dimensions. ESG strategies have become critical to the achievement of this goal Eccles & Serafeim, (2013). A part of this responsibility is investing in communities and implementing corporate sustainability policies Husted & Sousa-Filho, (2017). As explained by Torres et al., (2023), Social responsibility involves respecting human rights, promoting diversity, supporting education, training, maintaining fair

labor practices, promoting equal opportunity, prioritizing safety, taking responsibility for products, adhering to ethical procurement practices, and focusing on customer satisfaction and privacy. Torres et al., (2023);Santos, (2023)stated that environmental responsibility involves using natural resources wisely and ensuring their sustainability for future generations. Sustainability practice encompasses implementing sound environmental practices like establishing eco-policies, investing in sustainable initiatives, and implementing measures to control pollution. Organizational governance consists of the activities and structures employed by organizations in governing and administering their functions. It underpins each aspect of the ESG system to foster confidence among stakeholders and the surrounding communities of the firm Samans & Nelson, (2022). Increasingly, corporations have board committees that oversee their environmental impact. This underscores the importance of the governance element, along with investor proposals regarding environmental impacts and executive compensation including responsibility criteria Young & Thyil, (2008). A corporate governance plan includes the setting of goals and strategies, tracking their implementation, directing, and controlling overall operations, and reporting to shareholders on management's progress.

The genesis of ESG has been linked to the 1970s, when large corporations including GM, Ford and Cummins Engine decided to share information about social initiatives and contributions. It was largely influenced by natural disasters around the world that environmentalism was conceived in the 1980s. The Bhopal tragedy and the Exxon oil spill were among these disasters. ESG views corporate governance as a crucial component of performance and responsibility for companies. With the advent of 'green accounting, a revised

corporate structure is needed to facilitate greater compliance Yakhou & Dorweiler, (2004). It was either imperative or they would have to face the negative consequences of environmental damage if they didn't reform their corporate governance structures and business practices.

Ideally, sustainability standards would focus on monetizing environmental, social, and governance indices and integrating them directly with financial data. Despite the difficulty of developing such standards, financial reporting standards were originally developed in the nineteenth century as well. Social accounting literature has developed many constructs for sustainability reporting, commonly known as social accounting Chung & Cho, (2018). A more comprehensive perspective on the firm's performance is being provided to stakeholders through increasingly integrated modes of reporting in corporate reporting. Although these approaches may increase ESG disclosures' quantity and quality, they are not sufficient to meet general sustainability needs Santamaria et al., (2021a). Sustainability reporting does not hold organizations sufficiently accountable for their operations and activities. Due to this, ESG reporting has been reduced to a supposition, which is an attempt to hide businesses' true intentions Azuma & Higashida, (2024). Despite their apparent commitment to sustainability and social issues, corporations continue to operate in the same manner as in the past. Despite the damaging effects on social welfare and the ecosystem, businesses managed to make enormous revenues Eccles & Serafeim, (2013); Husted & Sousa-Filho, (2017).

While increasing qualitative ESG disclosures are being made by these corporations, these disclosures have yet to enhance accountability. Increasing disclosures on ESG tend to be window dressing, not underpinned by a sincere

commitment to protecting the environment. Considering current social and environmental degradation, sustainability disclosures have been of little help. It appears that monetizing environmental, social, and governance externalities is an innovative technique to promoting sustainability, however, due to the global warming crisis, it might be the only solution Bolton & Samama, (2013). It is imperative to point out that regardless of the crudeness of ESG indicators and their metric, they would serve an important purpose in bringing attention to the impact of businesses. It would generally be easiest to incorporate environmental costs quantitatively into financial statements from ESG indices. A first step in achieving this involves assessing the number of harmful emissions emitted by each organization using appropriate measurement equipment. Firms would become aware of hazardous production by means of cost analysis and relevant guidelines. Then, they will understand that engaging in the manufacturing of sustainable and cleaner goods pays off in the long run. Developing valuation models would enable the quantification of ESG impacts by determining their magnitude of impact Fan & Christensen, (2024).

Environmental performance, encompassing pollution control and prevention, emerges as a crucial aspect requiring the implementation of ESG activities in oil and gas industry operation(Doni & Johannsdottir, 2020). Companies excelling in environmental practices, despite incurring additional investments, benefit from enhanced business performance through lower costs, higher revenue, and improved reputation. Eco-friendly supply-chain management, considered an environmental quality management policy, is certainly linked to firm performance, providing a basis of competitiveness that allows companies to operate more effectively and improve overall performance(Choi et al., 2018). From a resources-based theory perspective, when an enterprise

prioritizes eco-sustainable initiatives and manages resources competently, it can enhance economic value by reducing costs and increasing revenue through a positive reputation. Firms emphasizing good corporate social performance, managing key stakeholders, and practicing high-level corporate governance generate positive business performance. Implementing socially responsible initiatives rather than strategic advertising serves as a reputation builder and efficiency improvement, attracting employees and positively impacting corporate efficiency.

However, it is crucial to note that CSR activities initiated solely for insider motives, termed insider-initiated corporate philanthropy, do not enhance firm value. (Heath & Norman, 2004) Such activities, originating from the desires of the board of directors rather than stakeholder concerns, may lead to an agency problem, wasting shareholder money on unjustified purposes and expensing agency costs without much contributing to the enhancement of firm value which is evident from the current study result concerning the combined ESG scores.

2.3 Theoretical Foundations on ESG and Financial Performance

There are two competing theories regarding the value relevance of ESG practices, namely economic theories, and sociopolitical theories. According to economic theories, ESG performance is predicted to be positively associated with a firm's value Behl et al., (2022). It is argued that firms who perform better in ESG tend to disclose more information about their ESG activities, whereas firms who perform worse in this regard tend to report minimal information about their ESG activities Arvidsson & Dumay, (2022). By disclosing capabilities that are difficult to reproduce by inferior

companies, the firm hopes to persuade stakeholders of its abilities. This argument suggests that firms can differentiate their own in the industry based on the way they disclose their environmental, social, and governance activities. Companies may reduce information risk if managers disclose their ESG activities, so it makes sense for them to do so. The ESG disclosure helps shareholders make better investment decisions, lowering capital costs Dhaliwal et al. (2011). As a result, ESG disclosure increases investments, enhances a company's reputation, and, ultimately, increases its value.

2.3.1 Stakeholder Theory

Based on the neoclassical paradigm, shareholders are assumed to be the company's most important stakeholders, and profit enhancement is its most important objective Keay, (2008). Therefore, the organization's efforts are directed toward achieving these primary goals. It is imperative that companies look far beyond this narrow focus. The corporate sector has been increasingly responsible for environmental and social concerns in recent decades, and many firms have integrated ESG into their business strategies Kotsantonis et al., (2016). By integrating ESG in management strategies, companies can achieve financial success and contribute to society. As per the Stakeholder Theory, ESG benefits not only shareholders, but also customers, employees, non-governmental, media, and government stakeholders Dupire et al., (2022). In addition to their identities, ideologies, interests, and expectations, stakeholders drive companies' strategies. By suggesting that a company cannot meet shareholders' needs without satisfying the needs of other stakeholders, stakeholder theory provides a new way to understand and manage these relationships based on the nature of their processes and outcomes.

Due to the greater need to differentiate products, innovative companies benefit from this process. A competitive image can be established for new products through engagement in social and environmental issues Dangelico & Pujari, (2010). Aside from product and process innovation, innovation at the position and paradigm level is also valued by innovative companies. By investing in ESG activities, companies ensure that their new launches are of good quality and reliable for consumers and society at large. For the rising concerns about corporations' effects on stakeholders, the stakeholderist approach encourages and relies on the discretion of corporate leaders to protect stakeholders' interests. Increasing amounts of support have been garnered for stakeholderism among academics in the fields of economics, management, and law Schaltegger & Wagner, (2011). The concept has also been embraced by corporate advisors, business leaders, and lawyers alike. People are skeptical of stakeholderism, concerned that managers may not act in their best interests to preserve stakeholder rights because there are no inducements for them to do so. Several studies suggest that corporate leaders won't go beyond protecting shareholder value to protect stakeholders Lichtenstein & Dade, (2007). According to this "agency" critique of stakeholderism, acceptance of stakeholderism should not be expected to produce material benefits for stakeholders Richter & Dow, (2017).

Stakeholderism is criticized by the agency critique as being counterproductive for two reasons. Primarily, stakeholder protection gives corporate leaders more discretion and leaves them less accountable since they are shielded from shareholder oversight. Managers would be entitled to make decisions by virtue of stakeholderism, since they might now be able to justify their choices based on their purported benefits to stakeholders Cennamo et al., (2009).

Nevertheless, corporate leaders' increased isolation from shareholders should be viewed as serving their own interests only if stakeholderism does not demonstrate a genuine commitment to stakeholders. This could reduce the value shareholders receive by increasing slack and underperformance. Furthermore, stakeholderism can mislead large corporations into believing that they can reduce negative externalities by themselves Gautier & Pache, (2015). Such a perception, however, would be false and harmful if stakeholderism is nothing more than empty rhetoric. Stakeholderism would seek to displace resources and focus away from policy reforms that could provide effective protections to stakeholders by raising illusory expectations about its ability to remedy corporate externalities. As a matter of fact, corporate managers' private interests require isolation from shareholder pressures as well as government intervention, and it is possible that some corporate leaders and their advisers support stakeholder capitalism as a means of achieving such outcomes Notteboom & Haralambides, (2020).

2.3.2 Agency Theory

The agency theory of corporate governance argues that managers and shareholders have an agency problem when they engage ESG Klettner, (2021). The theory contends that ESG expenditures are undesirable for shareholders due to the loss of profits caused by direct ESG expenditures Adeneye & Kammoun, (2022). Researchers have previously found evidence that supports agency theory including Fan & Christensen, (2024); Keay, (2008); Richter & Dow, (2017); Santamaria et al., (2021a); Young & Thyil, (2008) An agency's ESG activities may be affected by three different types of problems. Brown et al., (2006) argue that managers use firm resources to gain personal benefits by engaging in environmental, social, and governance activities, while Barnea & Rubin, (2010) argue that managers overinvest to

build their reputations as good citizens at the expense of shareholders. This theory asserts that ESG engagement reduces firm performance because it wastes firm resources. Furthermore, ESG requirements may compel companies to compromise profitability.

The firm cannot compete with organizations that do not exert much social effort since corporate social accomplishments require a large investment of capital and resources Clementino & Perkins, (2021). In addition, opportunistic executives engage in ESG initiatives just to avoid scrutiny and to minimize consequences of poor financial performance. Consequently, ESG activities are undertaken to gain attention and conceal weak performance. ESG engagement and manager misconduct have been found to be associated with controversy in many studies. On the other hand, ESG engagement could bolster managers' self-regulatory behavior, increasing their willingness to engage in ethical business practices. Studies indicate that firms that disclose more environmental, social, and governance information are less likely to avoid taxes, while CSR disclosures may mitigate insider trading problems Cormier et al., (2011). Research has also pointed out that environmental, social, and governance measures are often used as a cover-up of manager misconduct, possibly increasing the likelihood of corporate misconduct. To protect their reputations from negative investor evaluations and to offset negative events, companies accumulate reputational capital through social responsibility and reputation insurance.

Additionally, managers tend to invest heavily in ESG to benefit personally, earn a higher salary, build an empire, and get promoted, which further exacerbates the covering up phenomenon. The relationship between ESG performance and earnings management, and accounting profits and losses can

be reconciled using it. Management characteristics, including gender diversity on the board and gender, influence corporate misconduct Kaymak & Bektas, (2017). It is typically the managers of the company who perpetrate most corporate fraud.

It is imperative to note that a manager's personal misconduct might not equal fraud committed by the company. They may do so to maximize their own wealth by trading illegally in stocks and insider information. To reduce corporate fraud and misconduct, it is essential to investigate the factors that prevent managers from engaging in misconduct. Agency theory says divergent goals of management and executives may result in conflicts of interest. The theory helps principals and agents align their interests by providing a framework for understanding ESG dynamics Pepper & Gore, (2015). As a result, these mechanisms play an important role in the disclosure of ESG factors. An increasing number of companies are using agency theory to explain their ESG disclosures. There is indeed a strong association between ESG reporting and company characteristics, including executive pay gaps, highlighting the need for regulation and controls. Further, studies have shown that diversifying the board and having independent auditors to provide assurance over related non-financial information can improve ESG disclosures Rezaee & Tuo, (2017). Thus, to reduce agency costs and promote ethical management, ESG plays a key role in achieving this objective.

2.2.3 Legitimacy Theory

According to legitimation theory, businesses must continually assure society that they are operating according to its norms Castelló & Lozano, (2011). Companies and the societies in which they operate have a social contract in the form of expectations. This theory states that businesses will only persist

in the long run when society considers these companies adhere to a set of values aligned with the community's system of values. Legitimacy may also be characterized by the degree to which a firm is part of the cultural narrative defined by its activities and sphere of influence. It also discusses community and ethnic implications for companies seeking success in their environmental, social and governance practices Parsons et al., (2014).

In the modern enterprise environment, environmental and social performance depends largely on legitimacy, i.e., meeting socially and environmentally responsible standards. Companies tend to emphasize ESG practices instead of efficiency due to societal and customary requirements. There is rising interest in examining the relationship between legitimate business practices, environmental sustainability performance, and firm performance. Stakeholders' legitimacy is demonstrated by their endorsement of a company's values, inclusiveness, work environment, governance, and benefits, which influence rating agencies' ESG assessments Schaltegger & Wagner, (2011). Based on data from several studies Ameer & Othman, (2012); Giannarakis et al., (2014); Rezaee & Tuo, (2017), ESG effectiveness is highly correlated with financial performance, which is determined by the size of the company and the industry.

Stakeholder legitimacy may also be affected by organizational structure, policies, processes, classifications, and management. Environmentally friendly products and services are dominating firms' sales in today's business environment due to a growing awareness of ESG issues in society Shakil, (2021). ESG conduct is the primary method of legitimization being adopted by corporations. This philosophy assumes that responsibility a company has in society is not limited to creating investor value also taking care of employee

interests, environmental concerns, and governance issues. Drake & Deegan, (2009) regarding the importance of stakeholder legitimacy in regard to corporate ESG performance and Gray & Bebbington, (2000) contend that sociopolitical considerations can contribute to more understanding of ESG issues.

In previous research, authors explain how firms implement sustainability management through ESG, as well as how their sustainability reports become legitimate by disclosing pertinent information. Evidence shows that firms' social and environmental performance is positively influenced by their ESG conduct, even without explicit reference to legitimacy theory. It is the legitimacy theory that lays the theoretical groundwork for explaining how non-financial information contributes to the credibility of companies as it used in the past to explain CSR disclosures. According to Maama, (2021), ESG disclosure contributes to institutions' economic viability by strengthening institutional legitimacy. Moreover, Reber et al. Using this theory, Cheng et al., (2014). Jasni et al., (2020) argues that the legitimacy concept connects with stakeholder theory in ESG discussion. Stakeholder theory focuses on interactions with specific parties, whereas legitimacy focuses on a firm's association with society at large.

2.2.4 Institutional Theory

Based on institutional theory, organizations with high ESG scores are more likely to follow sustainability guidelines and standards. A significant amount of influence is exerted on executive management by this factor Liu et al., (2024). Due to this, firms have more credence and are less likely to malpractice or manipulate earnings. Also, the theory promotes transparency in information disclosure and sound business practices. ESG reports serve as

a response to organizational pressures based on the theory's conceptual framework, which suggests that collective organizations based on standards, guidelines, and philosophies really impact a company's behavior and processes Camilleri, (2018a). Basically, it advocates following and adhering to existing standards and conventions in order to gain public credibility and acceptance. By combining this theory with legitimacy theory, one can examine how wider forces in the economy affect the disclosure of ESGs Baldini et al., (2018).

The implications and investigation of legitimacy management have been the subject of many academic studies. This theory also explains why similar market characteristics are shared by firms with similar underlying qualities Liu et al., (2024). It asserts that social processes, norms, and expectations influence how businesses function within the social environment. In addition to the relationship between various industry players and their associations, corporate behavior is also influenced by the institutional environment. This includes regulations and norms relating to societally acceptable corporate behavior. According to this argument, institutions operate based on a set of beliefs, principles, and expectations. Adapted from political stakeholder theory, it emphasizes conformity, and asserts that homogenization occurs through coercion, mimicry, and normative influence Camilleri, (2018b). Institutional theory is intended to give us a clearer understanding of the accounting practices of companies and society. As a result, companies may have to conform to and adhere to the expectations, customs, and principles of society to obtain the backing of the community and thereby achieve legitimacy.

2.3 ESG Score implication on Financial Performance

Aydoğmuş et al., (2022) investigates the significance of ESG effectiveness on firm value and profitability, they found a strong relationship between ESG score and corporate capital gains for firms, which is accompanied by substantial impacts on corporate value and revenue. Utilizing 10 years of data with 36,478 observations, the study employs Tobin's Q and ROA as measures and Refinitiv's ESG assessment tools. Despite variations in results across studies, this study indicates a favorable relationship between ESG and financial performance. The findings of this study demonstrate the relevance of ESG factors in business decisions and policy formulation.

Ademi & Klungseth, (2022) analyzes the effect of ESG performance on profitability and the market price, utilizing panel data regression analysis on 150 companies listed in the Standard & Poor's 500 index during 2017-2020. A hypothesis test confirmed that ESG ratings, capital return, and firm valuation are associated with each other. The results of the study were consistent with previous studies emphasizing the importance of ESG considerations to the success of businesses.

Using panel data regression methods, Pinheiro et al., (2024) examined the impact of innovations on ESG metrics and its subsequent effect on productivity and profitability in the oil and gas sector. Findings reveal a remarkable correlation between research and development investment and ESG efficiency, with greater ESG achievement leading to improved efficiency and financial success. The results indicate that prioritizing ESG practices and aligning innovation with ESG goals can enhance economic value and financial performance. The study provides valuable insights for managers and

highlights the relevance of incorporating ESG strategies into strategy formulation.

Makridou et al., (2023) investigates the role of ESG initiatives on the profitability of European energy companies within the context of the European Green Agreement. Employing panel data analysis, it investigates the correlation of ESG factors and corporate profitability, with an emphasis on ESG dimensions. The research dataset spans from 2002 to 2020, encompassing 911 firm-year observations. Results indicate a negative but insignificant effect of ESG on profitability, with environmental responsibility having the strongest negative impact. The study highlights the criticality of embedding ESG components into corporate strategy and policy for sustainable economic growth.

Chung et al., (2024) explores the effects of ESG reporting on the business profitability of firms in Hong Kong. It uses a mixed methods approach to analyze data gathered from annual reports and separate sustainability reports of the companies featured on the Composite Large Cap Index. The study constructs an ESG disclosure index based on Hong Kong's 2019 guide, and it examines how ESG disclosures and indicators of corporate performance are compared using the modified Ohlson model. The results show that ESG disclosures were positively associated with the corporate performance of companies, with social disclosures providing more value to investors. The conclusions underscore the benefits of ESG metrics and scores to improving firm performance, and ultimately shareholder value within firms.

Menicucci & Paolucci, (2023) examined how ESG policies are affecting the financial health of 105 Italian banks from 2016 to 2020. The study examined four performance indicators and ten ESG dimensions from Refinitiv using

panel regression models. Statistical analyses demonstrate that ESG policies positively affect bank outcomes. A robust methodology is used to analyze the study, which incorporated comprehensive ESG metrics and controlled for factors specific to banks and regions. It is evident from the findings that environmental improvements contribute to profitability, while corporate governance improves performance in the long run whilst product responsibility negatively impacts financial performance.

In a study by Buallay, (2022) the relationship between sustainability disclosure and firm performance is explored using secondary data and statistical tests to determine how ESG disclosure impacts firm performance. The results show that, despite the absence of a significant correlation between ESG disclosure and agriculture performance, governance disclosure positively impacts market performance. It emphasizes the need for further research using mixed methods and large sample sizes to thoroughly understand why sustainability reporting is associated with agricultural sector efficiency.

An empirical study by Maji & Lohia, (2023) explores the interaction involving ESG reporting and firm profitability in India, utilizing a quantile regression model. A range of sophisticated analyses and tests are carried out in this study, including correlation analysis, classical linear regression models, and quantile regression models. Manufacturing firms showed a greater association with overall ESG performance than service firms, with the performance of manufacturing firms significantly influenced by ESG measures. The study underlines the crucial role of ESG information in driving firm performance and needs to be further explored in emerging markets.

In a study on MENA firm and their ESG data report, Buallay, (2022b) examined several sectors across seven sectors. The study was conducted using secondary data from the Bloomberg database, which included CSR reports, annual reports, and corporate websites from 11 countries. Sustainability reporting impacts financial performance metrics (ROA, ROE, and TQ) differently depending on sector, with some sectors showing significant positive effects, and others exhibiting inverse relationships. As ESG disclosures are limited to listed operating companies and are primarily concerned with quantity rather than quality, future research directions must explore the motivations behind sustainability practices and their relationship with firm performance using mixed research methods.

About & Diab (2019) using firm financial and market performance data from 2007 to 2016, investigates the impact of ESG assessment scores on corporate performance in Egypt. Data is drawn from the S&P database on ESG metrics, assessing the top 100 firms on the Egyptian stock exchange. Research is conducted using regression analysis with control variables, considering political volatility in ESG ratings and corporate profitability. The results indicate that companies with superior ESG scores have greater stock liquidity and trading activity, as well as higher returns on assets. Furthermore, the study suggests that political events, such as revolutions, exacerbate the association between ESG ratings and financial health, with positive effects pronounced post-revolution.

Al Amosh et al. (2023) examined the impact of ESG performance disclosures among non-financial firms listed in the Levant region. It uses content analysis of annual reports from 2012 to 2019 to assess the correlation between ESG disclosures and monetary outcomes metrics like Tobin's Q, ROA, and ROE.

The research hypothesis is that ESG disclosure enhances financial performance. The results show that environmental performance has a positive effect on ROA, while social disclosures have a positive effect on market value. Market value and return on equity do not appear to be significantly impacted by governance performance. A study recommends that ESG disclosure be more transparent to enhance stakeholder trust.

Rau & Yu (2024) conducted a comprehensive review academic literature on ESG and CSR from diverse perspectives. The study employs a systematic analytical approach that integrates empirical studies with theoretical frameworks such as stakeholder theory and ESG integration models to ensure methodological rigor. The study examines the relationship between ESG/CSR and firm performance using quantitative meta-analyses and qualitative case studies. Among the findings are increasing interest in environmental, social, and corporate responsibility, data quality challenges, discrepancies in ratings, and motivations for engagement. Therefore, more research in this area is needed, as well as more regulatory scrutiny.

Singh et al. (2023) investigates the impact of ESG activities on corporate financial performance, which is moderated by financial slack. The paper utilizes Agency Theory in conjunction with prior research grounded in Stakeholder Theory to examine how ESG investments impact firms' financial results. It was found that ESG disclosures adversely affect market performance for large and mid-cap firms, but they have a positive impact on accounting performance. By exploring indirect ESG-CFP links, the study contributes to methodology and enriches the literature by revealing the dynamics of sustainability investment in the context of agency concerns.

Doni et al., (2022) Assesses the organizational social performance and governing practices of European energy companies. This study adopts a multi-theoretical approach incorporating Legitimacy Theory, Stakeholder Theory, and Resource-Based View. Based on data from large European-listed oil and gas companies, the study investigates the relationship between CSR initiatives in their governance systems and Corporate Social Performance. Results show a positive relationship between CSR-oriented corporate governance and social practices. The study uses an ASSET4 database for social performance scores and accounting-based variables to measure firm profitability based on company performance. The study highlights that a stakeholder-engagement strategy and a positive organizational culture are critical for enhancing CSR performance.

Zaman et al. (2022) examined the relationship between corporate governance policies and corporate social responsibility in the European oil and gas industry. A regression analysis of data from European-listed oil and gas companies is conducted using a multi-theoretical model that incorporates legitimacy theory, stakeholder theory, and a resource-based view. Moreover, strong CSR governance correlates with enhanced social outcomes, suggesting that CSR-oriented governance practices promote social performance. The study demonstrates how important effective corporate governance is in fostering sustainable practices within the oil and gas industry.

2.4 ESG Score implication on Market Value

Eng et al. (2022) carried out a comparison study of sustainability disclosures in the Sustainability Accounting Standards Board(SASB) Navigator and Bloomberg ESG Scoring mechanisms to assess the implications of such reporting on company value. Through shareholder-stakeholder theory,

regression analysis is conducted on a dataset of 2,600 openly traded manufacturing companies in Europe. They found that comprehensive Bloomberg ESG disclosures positively affect firm value, but the generic SASB disclosures negatively affect it. Also, the results show that ESG ratings have been associated with increased firm value, suggesting that transparency and disclosure are important for investors and management decisions.

Aboud & Diab (2018) compared the effect of ESG data on firm value of companies listed in the Egyptian Stock Exchange. By employing the ESG Index from S&P's EGX, it examines whether inclusion in the index influences company value. A combination of quantitative and nonparametric tests is used to analyze data from traded Egyptian companies. The results indicate that firms listed in the ESG index demonstrate greater enterprise value compared with control groups, which indicates the ESG disclosures have a positive impact on company value in Egypt. The study provides regulators and investors with valuable insights into the macroeconomic significance of ESG reporting in developing countries.

Fahad & Busru, (2021) using data from Indian companies which are large capital companies, the authors examined the potential impact of CSR reporting on corporate efficiency. By comparing Bloomberg ESG scores for CSR disclosure with financial metrics like ROA and Tobin's Q, this study examines how CSR disclosure influences profitability and value. The analysis is informed by theoretical frameworks such as stakeholder theory and agency cost theory. It is found that in the Indian context, more proactive CSR disclosure can negatively impact firm value and subsequently profit, pointing out the dynamics of CSR-performance interactions in emerging markets.

Dkhili, (2024) studied how the ESG factors affect market performance and how competitiveness moderates the effect of ESG factors. A panel regression analysis and a dynamic panel Generalized Method of Moments model are used to analyze data from 720 listed companies in eight European countries between 2000 and 2019. The study found that ESG has a positive influence on market performance, particularly when combined with competitive advantage. It also provides policymakers, executives, and shareholders with insights on how to promote sustainable practices by evaluating environmental commitment scores, company leverage, assets, and growth rate.

Ismail et al., (2018) examined the impact of various parameters, including firm size, corporate structure, earnings, liquidity, multinationalism, and affiliation with corporate organizations, on Corporate Environmental Commitment Disclosure quality in light of Legitimacy and Stakeholder theories. Study analysis covers data from 19 emerging economies, using a 42-item disclosure index as well as robust statistical methods, such as Pearson correlations, multiple regressions, and robust regressions. The findings indicate that Corporate Environmental Disclosure quality is correlated with several variables, including company size, foreign shareholders, earnings, liquidity, and affiliation with corporate organizations. The findings of this study offer valuable insights for policymakers, authorities, and practitioners in maintaining environmental reporting guidelines and achieving sustainability goals.

Ramírez-Orellana et al., (2023) investigates the interactions between ESG practices and investment strategies in multinational oil and gas companies. Using stakeholder and agency theories, it develops an ESG index that evaluates the environmental, social, and governance aspects of a company.

This index identifies factors that impact corporate profitability, market risk, and market value. This study uses Partial Least Squares Structural Equation modeling to analyze data from 219 oil and gas companies. It reveals that ESG practices have a notable positive impact on market value, mediated by financial performance. The relationship between ESG practices and market risk also shows an inverse relationship. Ramírez-Orellana et al. (2023) concludes that integrating ESG factors into market valuations and mitigating risks is a key component in enhancing market valuations.

Kaupke & zu Knyphausen-Aufseß (2023) describes how sustainable practices impact company value in the Oil and Gas industry. By addressing gaps in industry-specific research and addressing the endogeneity problem often overlooked in previous studies, the study investigates the link between green efforts and enterprise value in the petroleum industry around the world. Drawing from literature on sustainable business and monetary outcomes, the study constructs arguments and employs a Standard linear solid model to determine the direction of the association. Utilizing data from 1515 observations spanning 14 years, the Thomson Reuters ESG rating measures companies' ESG performance. The results suggest a negative correlation involving environmental performance and company value in the petroleum industry, challenging the widely held belief that effective eco-friendly practices contribute to greater company value. By focusing on long-term perspectives, the study offers practical insights to practitioners in developing sustainable strategies.

Yoon et al. (2018) examined how corporate social responsibility impacts the enterprise value of Korean stock market firms. Using Ohlson's valuation model, the study examines CSR performance's impact on market value using

ESG scores as proxies. The methodology involves empirical estimations with the data of 705 Korean companies traded on the Korean stock market. Despite differences across industries and company structures, findings indicate CSR positively influences firm value. This study provides valuable insights into CSR in emerging markets and its relevance to organizational policy and community wellbeing.

Rokhmawati et al. (2015) investigates how Greenhouse gases pollution affects firm financial performance in Indonesia. The study examined the relationship between instrumental stakeholder theory and Porter's competitive advantage theory through primary data collection and regression analysis. Based on these findings, return on assets (ROA) and pollution intensity show a positive correlation, indicating Indonesia does not have adequate financial incentives and penalties to regulate Greenhouse gases emissions. Additionally, firm social responsibility positively influences financial performance, emphasizing the importance of sustainable business practices.

Qiu et al. (2016) investigate the relationship between environmental and social reporting and profitability. In this study, Bloomberg's disclosure scores tailored to industry relevance were used over a period of 2005-2009. This analysis is guided by theoretical frameworks such as Legitimacy Theory, Resource-Based View, and Voluntary Disclosure Theory. Investors' interest in social performance is reflected in a positive correlation between financial performance over the past year and recent social disclosures. Despite this, there was no evidence of reverse causality, and environmental disclosures had no significant impact on enterprise value.

Muhammad et al. (2015) examined the relationship between environmental commitment scores and profitability of corporations listed on the Australian

stock exchange. They employed an empirical methodology to analyze the correlation among corporate environmental performance and profitability in Australia from 2001 to 2010, with a focus on the pre-financial crisis period. A panel data regression analysis and a factor analysis are conducted to analyze data collected from 76 Australian firms based on neo-classical agency theory and stakeholder theory. The results indicate a positive association between corporate environmental performance and corporate financial performance during economic growth periods, illustrating the importance of environmental strategies to enhancing financial performance.

(Arayssi et al., 2020) examines the influence of board composition on ESG reporting in GCC countries. Although extensive studies are available on the implication of ESG disclosure for company performance, shareholders confidence and firm reputation, studies explicitly inspecting board structure's effect in GCC countries are inadequate. By studying publicly listed firms of GCC from 2008 to 2017, the study observes that higher board independence and female membership improves social responsibility reporting. The research highlights the significance of independent directors, female board members, and sustainability committees in advocating efficient ESG initiatives.

2.5 Hypotheses Development:

According to the above literature review most of the previously studied have found a significant positive between ESG disclosures and firms' profitability and valuations. However, there are mixed results particularly when reviewing the independent pillars of ESG such as environmental score, social commitment score, corporate governance score. Thus, based on the above

literature review and the above-mentioned discussion, the following hypotheses are developed:

H1: The combined ESG scores of oil and gas firms have a significant impact on the firms' profitability.

H1a: The environmental score of oil and gas firms has significant impact on the firms' profitability.

H1b: The social commitment score of oil and gas firms has significant impact on the firms' profitability.

H1c: The corporate governance score of oil and gas firms has a significant impact on the firms' profitability.

H2: The combined ESG scores of oil and gas firms have a significant impact on the firms' valuation.

H2a: The environmental score of oil and gas firms has a significant impact on the firms' valuation.

H2b: The social commitment score of oil and gas firms has significant impact on the firms' valuation.

H2c: The corporate governance score of oil and gas firms has a significant impact on the firms' valuation.

Concluding Remarks:

This chapter provides detailed understanding about the theoretical underpinnings describing the nexus between ESG factors and the financial performance and valuation of the oil and gas companies. The interventions of

various theories such as stakeholder theory, legitimacy theory, and resource-based theory provide legitimate grounds in describing the economic viability of the oil and gas companies in the various regions. The chapter also provides a detailed discussion on the evaluation of ESG and the contributing factors. The chapter ends with hypothesis development which is aimed to contribute empirical evidence in the growing body of literature pertaining to ESG and economic performance of Oil and Gas companies.

Chapter Three: Research Methodology

3.1 Introduction

This chapter presents the variables used in the study and the indicators used for their measurement. Followed by the study sample and how it was selected, the sources used by the researcher to collect the data are presented followed by the statistical methods used in this study and then models development.

3.2 Data Collection and Study Sample

The current study initially involved 57 listed companies in various stock exchanges as data sets of oil and gas industries operating in Europe and Middle Eastern countries. The panel data period ranges from 2013 until 2023 and it includes ESG scoring data and financial metrics of these companies.

Panel data implies a dataset that encompasses observations on various entities over a period of time. In the context of the current study concerning Oil and Gas Companies within the geographical territories of European and Middle East, the data incorporates information collected from these firms over the timeline from 2013 to 2023. The dataset features variables such as combined ESG Scores, which contain the assessments of environmental initiatives,

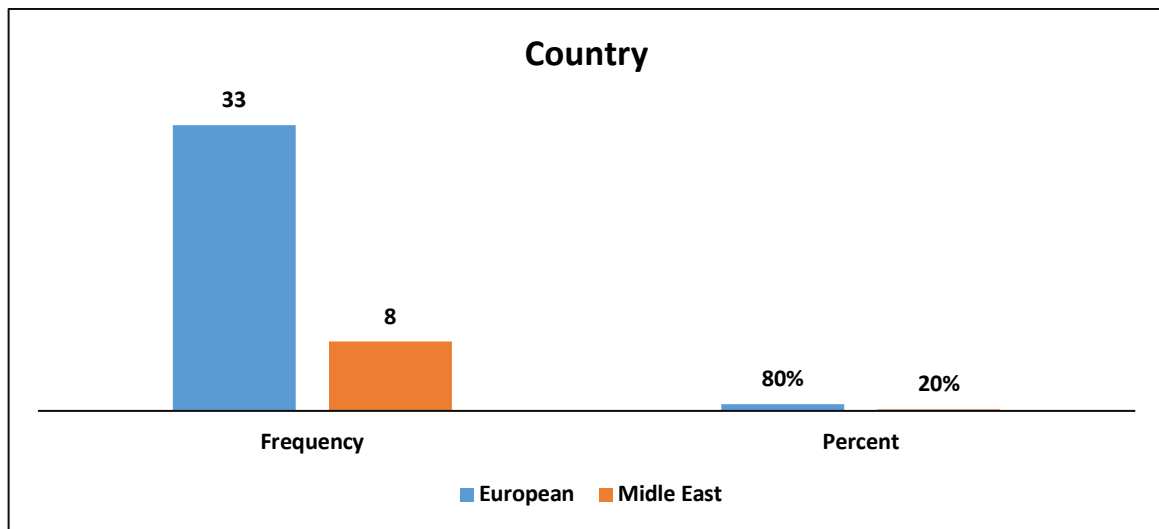
social commitments, and adherence to governance practices of the chosen oil and gas companies. Additionally, financial health ratios like Return on Assets and Tobin's Q are included, offering insights into the companies' profitability and market valuation. This longitudinal dataset enables the examination of how these variables evolve and interact over the specified timeframe, facilitating comprehensive analyses of trends and relationships in the oil and gas sector.

The research process involves the selection and weighting of issues, utilizing disclosure standards, industry-specific frameworks, governance codes, and materiality analyses. Data collection follows for identified indicators, with scored tickers undergoing rigorous quality checks. Issue priority is assigned, and scoring model decisions are made based on factors like disclosure, fit, and quality of indicators. Parameters and preliminary scores are prepared for validation. Validation encompasses input data, model and parameter components, and outputs. It occurs before new industry releases and during annual reviews. Monthly validation is conducted for input/output as new data is reported. Scores are updated on Bloomberg Terminal, and the universe of Bloomberg ESG peer groups is added on Bloomberg ICS. Methodology documents for newly scored industries are published on Bloomberg Environmental, Social, and Governance (BESG).

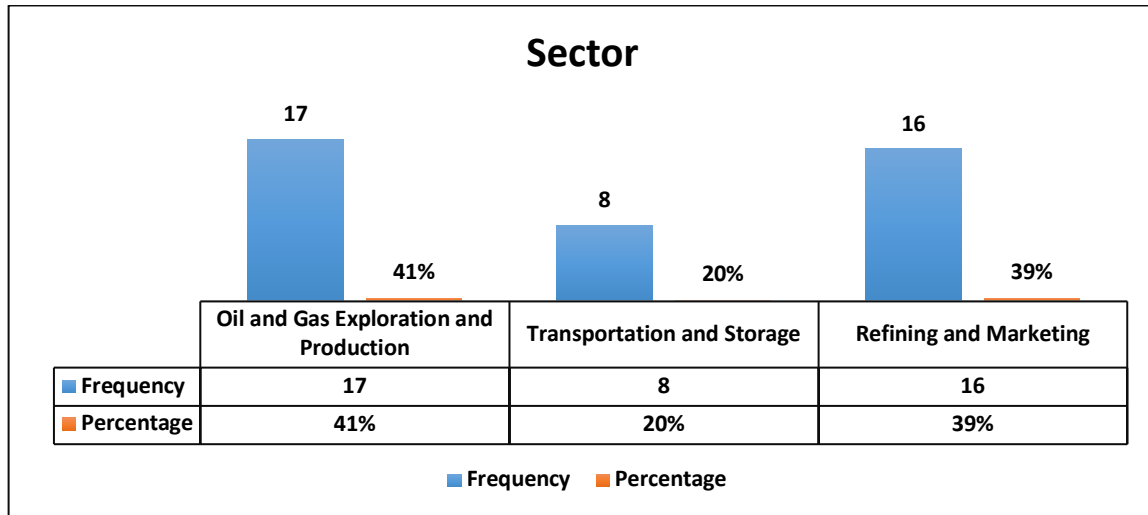
The process of data filtering embarked with an initial data set covering 57 companies. Rigorous filtration criteria were applied, including the exclusion of entities with missing financial information, those enduring bankruptcy, and those not compatible with the Big 4 pillars of ESG. Following this rigorous filtering process many samples from the middle east regions were excluded and the final sample was refined to 41 companies under the three broad

categories of oil and gas industries. The utilization of the Bloomberg Terminal database served as a pivotal resource in this filtration process, ensuring the inclusion of only robust and reliable data for the subsequent analysis. This meticulous filtering methodology enhances the research's precision and reliability by ensuring that the selected dataset is representative of financially sound and methodologically consistent oil and gas companies. Further details on the final samples selected in terms of country of origin and categorization under oil and gas industry are provided in the graphical illustrations below.

Graph 1: Categorization of Sampled Firms Based on their Country of Origin



Graph 2: Categorization of Sampled Firms Based on their Sector.



As can be seen in Graph 1 the final sample of the current study included three distinct categories within the sector, Oil and Gas Exploration and Production with 17 companies, Transportation and Storage with 8 companies, and Refining and Marketing with 16 companies. Also, Graph 2 shows the geographical distribution which reveals that out of the total, 33 companies are situated in Europe, while the remaining 8 are located in the Middle East.

3.3 Study Variables and their Measurement:

3.3.1 Dependent variables

Financial performance will be measured using established metrics such as Return on Assets and Tobin's Q, while ESG scores will be assessed based on firms' initiatives in areas such as corporate social responsibility activities, sustainable commitments, and ethical governance practices. Incorporating longitudinal analysis into a robust methodology, this thesis examines the impact of environmental, social and governance performance on financial results. ESG efforts continue to grow in importance, and both corporate executives and investors need a deeper understanding of how they relate to financial performance.

Evaluating a firm's economic viability and effectiveness is crucial in corporate assessment, encompassing a systematic analysis of financial performance. Essential indicators such as profitability ratios, liquidity measures, and market valuation metrics collectively contribute to a holistic comprehension of a company's financial well-being. Strong financial performance is characterized by efficient asset utilization, sustained profitability, and prudent risk management practices Weber et al., (2010). Distinguishing itself from previous research, this study extends its scope by examining both current performance Return on Assets(ROA) and future value (Tobin's Q) to provide additional insights into ESG performance. Acknowledging the significance of social, environmental, and governance practices for all stakeholders, this research emphasizes the crucial link between ESG disclosure and financial performance. Therefore, in this study, the dependent variable is the financial performance of Oil and Gas companies, and it is represented by two variables (i e. ROA and Tobin's Q) which are related to the regression models executed in this study.

Return on Assets serves as a metric that delineates the internal efficiency stemming from managerial decisions and the adept allocation of a company's assets. Alongside Return on Equity, ROA remains frequently employed metric for gauging overall corporate financial performance. The corresponding ratio for each sampled firms obtained from the Bloomberg terminal database and is calculated using the following formula:

Equation 1: Formula for Calculating ROA

$$ROA = \frac{Net\ Income + Interest\ Expense(after\ tax)}{Average\ Total\ Assets}$$

Along with ROA, Tobin's Q quantifies the relationship between a firm's market value and its intrinsic value, specifically derived by the ratio of market value to replacement cost of its underlying assets. Many studies suggest this metric as an instrumental in discerning whether a company is overvalued or undervalued Alareeni & Hamdan, (2020a); Velte, (2017). Analysts commonly employ the prescribed formula below for Tobin's Q calculation, acknowledging the inherent challenge in precisely determining the replacement cost of underlying assets. The market value is assessed by the outstanding stock and debt, while the replacement cost measured employing the book value of assets. A ratio equal to or greater than 1 indicates that the firm's market value surpasses its recorded assets.

Equation 2: Formula for Calculating Tobin Q

$$Tobin\ Q = \frac{Market\ value\ of\ equity\ and\ liabilities}{Book\ value\ of\ equity\ and\ liabilities}$$

3.3.2 Independent Variables:

In this study equal weight were assigned to economic, environmental, social, and corporate governance performance scores. These ESG scores serve as metrics for evaluating the overall ESG performance of the firm. This study includes four independent variables namely ESG combined score(CmbESG), environment score (EVS), social commitment score (SCS), and corporate governance score(CGS) all obtained from the Bloomberg database. Bloomberg employs a bottom-up, model-driven methodology for scoring ESG performance, primarily extracted from compliance reports and open access data sources. This transparent approach and rubrics based ESG scoring mechanism is widely accepted in the global enterprise community. The

Bloomberg database measures Environmental(E), Social(S), and Governance(G) scores, measured on a scale counting 0 to 100, where the extreme indicates superior commitment of companies towards ESG initiatives. The E & S Scores are structured hierarchically into Pillars, Issues, Sub-Issues, and Fields, with each issue having at least one sub-issue collecting relevant E&S data fields. This framework is applied to assess the pillars, issues, and sub-issues specific to the oil and gas sector in the context of E & S considerations.

In evaluating the oil and gas industry through Bloomberg's ESG scoring methodology, environmental, social, and governance dimensions are ranked based on financial materiality. Bloomberg Industry Classification Standard integrates the Environmental and Social dimensions considering its mutual implications. Notably, the environmental dimension carries the highest weightage at 45.5%, while the remaining two dimensions, social and governance, are accorded equal weightage from the remaining percentage. The factors as listed in Table 1 assess the environmental and social dimensions under the three specified categories with each factor ranked considering the probability, magnitude and timing of impact as given in the table below:

Table 1: Bloomberg Scoring Methodology for Environmental and Social Dimensions

Factors of Assessment	Integrated Utilities & Power Generation	Electric Transmission & Distribution	Gas Utilities
Air Quality	3		
Climate Exposure	1	1	
Ecological Impact	7		2
GHG Emissions Management	1		1

Sustainable Product	3	3	3
Waste Management	3		
Water Management	6		

Governance issues for Bloomberg's ESG scores undergo a comprehensive selection process involving both top-down and bottom-up research. This encompasses a review of global frameworks, scrutiny of country- and market-specific corporate governance codes, and analysis of listing rules. Company disclosure is examined to identify pertinent issues, with considerations for company- and country-specific factors. Governance issues are grouped into four themes: Board Composition, Executive Compensation, Shareholder Rights, and Audit, each weighted through fundamental research. Adjustments are made for binary/policy fields within issues. The overall Governance Pillar score's weighting is determined by fundamental research, accommodating variations in ownership structures. Assessment of mechanism for governance dimension is provided in the following Table:

Table 2: Bloomberg Scoring Methodology for Corporate Governance Dimension

Governance Score	BI Theme Priority Rank	Theme Weight
Board Composition	1	35.00%
Executive Compensation	2	24.94%
Shareholder Rights	2	24.94%
Audit	4	15.12%
Total		100%

3.3.3 Control Variables:

In this study, four control variables are incorporated to mitigate potential influences on the outcomes of my study. The first control variable is firm size (SIZE). The consensus in previous research regarding firm size (SIZE) as a

covariate, associated with ESG performance, prompts us to anticipate that firm size will impact the results and function as an explanatory factor in scrutinizing the relationship with ESG performance Dremetic et al., (2020). This expectation is grounded in the premise that larger companies typically boast higher cash-flow, translating to enhanced capabilities for investment in areas like research and development. The augmented capacity for research and development investment, coupled with the implementation of sustainable business models, holds the potential to manifest in higher ESG scores. Consequently, accounting for company size in the regression model becomes imperative. Data on Total Assets obtained from Bloomberg's Database is utilized, with SIZE denoting the natural logarithm of a firm's total assets. This nuanced approach ensures a robust examination of the relationship between ESG performance and firm size in our study.

The second control variable is financial leverage(LEV). The inclusion of financial leverage as a pivotal control variable is a customary practice in the field. According to Juul Andersen, (2009) a firm's capital structure plays a crucial role in shaping its strategy, underscoring the dynamic relationship between leverage and competitiveness. Investors find a firm's capital structure of paramount relevance as it unveils vital information about its strategic and financial composition. Additionally, Yoon & Jang, (2005) suggests that the effect of leverage on a firm's financial position hinges on if the positive effect of reduced discretionary free cash flows outweighs the negative effects on conflicts of interest involving creditors and shareholders. Elevated leverage for the borrower may entail heightened risk for the lender, potentially hindering the company's capacity to secure additional capital if excessively leveraged. This limitation curtails the exploration of investment opportunities,

although some degree of leverage is deemed appropriate for certain companies. Given the diversity in companies' capital structures, specifically in terms of debt-to-equity ratio as a control variable for leverage in the regression model is indispensable for a comprehensive examination of financial structures.

The third control variable is asset turnover ratio. The asset turnover ratio is calculated as the proportion of sales revenue to the average assets within a specific timeframe, exhibiting wide applicability across various industries.

This ratio serves as a metric to assess the efficiency of all assets within an enterprise during the given period, elucidating the effectiveness of the assets in translating investments into economic benefits. A heightened total asset turnover ratio implies a bolstered operational capacity for the enterprise. This ratio provides valuable insights into the enterprise's ability to utilize its assets efficiently, underscoring its operational efficacy and overall financial performance in the specified period within the chosen industry.

The fourth control variable is investment ratio. The capital expenditures to sales revenue ratio serves as a metric evaluating a company's allocation of resources to future growth concerning its present earnings, considering elements of ESG factors. An enhanced ratio suggests substantial investments in future expansion, potentially reflecting a commitment to sustainable and responsible business practices. In the context of profitability, a higher ratio may indicate robust financial health, driven by strategic investments. Conversely, a lower ratio could imply a prioritization of current operational activities over substantial investments in prospective ventures.' This ratio provides a comprehensive measure of a company's strategic balance,

encompassing aspects of ESG considerations, profitability, and overall firm growth strategies.

In addition to the four variables, this study incorporates a regional categorization dummy variable. This inclusion aims to streamline the comparison of financial performance between companies operating in the Middle East and European regions.

The selection of the four control variables is substantiated by previous studies that have identified as size of the firm, leverage ratio, assets turnover, and investment ratio as crucial elements when examining the influence of ESG commitments of oil and gas firms on financial performance Baran et al., (2022); Chen et al., (2022); S. Chen et al., (2023).

The measurement of the dependent, independent and control variables are presented in Table 3.

Table 3: Definition and Measurements of the Study Variables

Variable Category	Name	Representation	Measurement
Dependent	Financial Performance	ROA	Total profit/total assets at time t.
	Firm's total value	TQ	Ratio of the market value to book value of assets and liabilities at time t.
Explanatory variable	ESG rating	CmbESG	Bloomberg score for ESG initiatives for firm i at time t.
	Environmental Score	EVS	
	Social Commitment Score	ECS	

	Corporate Governance Score	CGS	
Control Variables	Firm Size	ln(TA)	Ln of total assets (TA) of the firm
	Financial leverage	LEV	Ratio total liabilities to shareholders equity
	Investment	INVEST	Ratio of capital expenditures to total sales
	Assets Turnover	AT	The proportion of sales revenue to the average assets
Dummy Variable	Middle eastern	MDLEAST	1 if firms from Middle Easter countries, 0 for others

3.4 Model Development

To test the study hypotheses, the researcher applies the multiple linear regression technique. Econometricians employ regression analysis to quantitatively assess economic relationships that were previously theoretical. This method facilitates the examination of potential relationships by explaining movements in the dependent variable based on changes in the independent variables. The construction of regression models is intended to test significant quantitative relationships and ascertain the strength and direction of these relationships.

In this study, the primary objective is to establish a quantitative relationship between dependent and independent variables, making regression analysis the chosen methodology. The initial phase involves identifying the model with the guidance of relevant economic theories. This step has already been executed through an extensive review of existing literature pertinent to the thesis study and the incorporation of theories intended for analysis,

culminating in the construction of the model. This methodological approach aligns with the objective of uncovering and comprehensively understanding the quantitative relationships within the economic context explored in the study.

Multivariate regression models facilitate the incorporation of multiple independent variables into the linear regression framework, expanding upon the traditional univariate regression models that consider only one independent variable. Through multivariate regression analysis, the impact of each independent variable on the dependent variable can be examined while holding the influences of other variables constant. This approach allows researchers to isolate the impact of a specific variable on the dependent variable amidst the presence of other covariates, thereby enhancing the exploration of cause-and-effect relationships within financial phenomena, such as the relationship between ESG scores and financial performance.

Conducting this analysis necessitates the incorporation of additional independent variables, commonly referred to as control variables. These variables play a crucial role in elucidating the fluctuations in the dependent variable, allowing for a comprehensive understanding of potential cause-and-effect relationships. Constructing a model that fully elucidates the variations in the dependent variable based solely on the independent variables is a challenging task. To address this intrinsic complexity and acknowledge unexplained random errors in the data, a stochastic error term is often introduced into the model. This stochastic term serves to describe unpredictable variations and discrepancies that cannot be ascribed to the specified independent variables. In doing so, the inclusion of control

variables and a stochastic error term enhances the model's capacity to provide accurate and nuanced insights into the relationships under investigation.

To investigate the causal association linking ESG scores and financial performance, the study has developed a theoretical linear regression model based on informed selection of variables for estimating this association. Initially, all control variables are included into the regression models to systematically assess their prospective explanatory power for financial performance. This process is undertaken through Ordinary Least Squares (OLS) regression, aiming to identify variables with significant impacts on financial performance. Due to correlation between the independent variables the study entails the creation of eight distinct models, each serving a specific testing purpose. These models involve testing with two dependent variables, specifically ROA and Tobin Q and four independent variables namely ESG combined score(CmbESG), Environmental score(EVS), Social Score(SCS), and Governance Score(CGS). These models are augmented by the inclusion of the previously discussed control variables. Furthermore, the analysis incorporates an error term in the OLS regression models to account for unobserved factors and random errors, enhancing the robustness of the investigation into the intricate interplay between ESG factors and financial performance.

To examine the impact of ESG information disclosure on financial performance of Oil and Gas companies the following multiple linear regression models are executed:

Equation 3: Linear Regression Model Measuring Impact of Combined ESG score on Financial Performance

$$ROA_{it} = \beta_0 + \beta_1 \times CmbESG_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 4: Linear Regression Model Measuring Impact of Environmental score on Financial Performance

$$ROA_{it} = \beta_0 + \beta_1 \times EVS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 5: Linear Regression Model Measuring Impact of Social Commitment Score on Financial Performance

$$ROA_{it} = \beta_0 + \beta_1 \times SCS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 6: Linear Regression Model Measuring Impact of Governance Score on Financial Performance

$$ROA_{it} = \beta_0 + \beta_1 \times CGS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 7: Linear Regression Model Measuring Impact of Combined ESG score on Firm Value

$$TQ_{it} = \beta_0 + \beta_1 \times CmbESG_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 8: Linear Regression Model Measuring Impact of Environmental score on Firm Value

$$TQ_{it} = \beta_0 + \beta_1 \times EVS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 9: Linear Regression Model Measuring Impact of Social Commitment Score on Firm Value

$$TQ_{it} = \beta_0 + \beta_1 \times SCS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Equation 10: Linear Regression Model Measuring Impact of Governance Score on Firm Value

$$TQ_{it} = \beta_0 + \beta_1 \times CGS_{it} + \beta_2 \times \ln TA_{it} + \beta_3 \times LEV_{it} \\ + \beta_4 \times AssetTurnover_{it} + \beta_5 \times INVEST_{it} + \epsilon_{it}$$

Where,

ROA= Return on Assets

Tobin's Q= Tobin Q

CmbESG= Combined ESG scores

EVS= Environmental Score

SCS= Social Score

CGS= Corporate Governance Score

ln(TA)= Size of the firm

LEV= Leverage Ratio

INVEST= Capital Investment

AT= Asset Turnover

ε = Error Term

$i=0,1,2,\dots,43$

$t= 2013,2014,\dots,2023$

Linear regression, designed for linearly distributed data, encounters challenges in classification problems where data is present in a grouped distribution. This deviation arises from the categorical nature of label data, such as country classification in the current study, contrasting with the numerical label data in regression problems. My approach employs static and dynamic panel data techniques, leveraging the advantages of panel data in addressing cross-sectional and time variations. This diminishes the likelihood of temporal errors, enhancing result generalization. The fixed effects model

estimates parameters for each cross-sectional unit (firms), while the random effects model assumes randomly distributed firm-specific terms, improving efficiency without necessitating parameter estimation for each firm. However, a correlation between fixed effects and independent variables may render the random effects estimator inconsistent in certain scenarios.

Equation 11: Fixed effect Model

$$FP_{it} = \beta_0 + \beta_1 ESG\ Factors_{it} + \beta_2 \ln TA_{it} + \beta_3 LEV_{it} + \beta_4 Asset\ Turnover_{it} + \beta_5 INVEST_{it} + \alpha_i + \varepsilon_{it}$$

Where,

FP= Financial Performance variables(ROA & Tobin Q)

ESG Factors= Bloomberg assessed Environmental Score, Social Score, Corporate Governance Score for firm i at time t.

α_i = fixed effects specific to each company,

$i=0,1,2,\dots,43$

$t= 2013,2014,\dots,2023$

Whilst random effect model incorporates casual and unpredictable variables, in contrast with the time dependent variables in the Fixed Effect model. In the FE, random variables are treated as if they were fixed, lacking randomness. The Random Effect model considers individual effects, utilizing one intercept per entity (W_{ij}). Unlike the Fixed Effect model, which employs α_i as an explanatory variable for individual effects, the Random Effect model splits the random error term into two components: a constant term α_i and a time-varying term α_i . This distinction allows for a comprehensive understanding of both time-invariant and time-variant influences.

Equation 12: Random Effect Model

$$FP_{it} = \beta_1 ESG\ Factors_{it} + \beta_2 \ln TA_{it} + \beta_3 LEV_{it} + \beta_4 Asset\ Turnover_{it} + \beta_5 INVEST_{it} + \alpha_i + W_{ij} + \varepsilon_{it}$$

Where,

FP= Financial Performance variables(ROA & Tobin Q)

ESG Factors= Bloomberg assessed Environmental Score, Social Score, Corporate Governance Score for firm i at time t.

α_i = Random effects specific to each company.

W= intercept per firm

$i=0,1,2,\dots,43$

$t= 2013,2014,\dots,2023$

3.5 Model Validity and Reliability:

The testing phase of the regression model plays a pivotal role in guaranteeing the reliability and precision of estimated relationships. This assessment spans multiple dimensions, primarily focusing on three pivotal models: Ordinary Least Squares(OLS) Regression, Fixed Effect Model, and Random Effect Model. Within OLS Regression, a comprehensive set of diagnostics is applied, encompassing the scrutiny of residuals for patterns, validation of linearity assumptions, and assessment of residual normality. The Hausman test is instrumental in statistically evaluating whether observed individual effects correlate with conditioning regressors in the model, while autocorrelation is assessed using the Durbin-Watson statistic. The Durbin-Wu-Hausman Test of Endogeneity is employed to ascertain the genuineness of endogeneity in the endogenous regressors within a simultaneous equation

model. This exhaustive evaluation ensures the robustness and appropriateness of the regression models, laying the foundation for credible and insightful interpretations of the estimated relationships.

Chapter Four: Results and Discussion

This chapter presents the results of the various statistical tests used in this study including descriptive statistics of the study variables, Pearson correlations among the variables, and the results of the multiple linear regression models used in this study for testing the study hypotheses.

4.1 Descriptive Statistics of the Variables

The study thoroughly utilizes descriptive statistics to examine a decade-long dataset containing annual information from 41 oil and gas companies headquartered in Europe and the Middle East. The methodical framework is constructed around three distinct sets of variables. The dependent variables employed in this study, ROA and Tobin Q, are fundamental indices determining financial performance of the businesses. The predictor variables are analytically measured through the Bloomberg score on a 100-point scale, incorporating Environmental, Social, Governance(ESG), and overall ESG factors. These aspects query into the firm's commitment to environmental sustainability, its societal impact, and the efficacy of its governance structures. To ensure an effective analysis, the researcher used four control variables which are Leverage, Assets Turnover, Investment, and Size of the Firms. Leverage estimates the magnitude of debt utilization, Assets Turnover

examines asset efficiency, Investment indicates capital deployment, and Size of the Firm denotes the enterprise's scale.

By leveraging this vigorous dataset and an accurately structured set of variables, the study objects to explore intricate patterns and relationships, offering a scholarly investigation of the interaction between ESG initiatives, financial performance, and critical control factors in the context of the oil and gas industry in Europe and the Middle East.

Table 4: Descriptive statistics of study variables

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis	Shapiro-Wilk	
Dependent Variables								
ROA	0.07	0.17	0.12	0.03	0.09	-1.16	0.95	>0.05
Tobin Q	0.56	1.26	0.91	0.21	0	-1.15	0.96	>0.05
Independent Variables								
Environmental Factors	3.09	59.49	27.69	13.87	0.15	-0.65	0.99	>0.05
ESG Factors	6.48	49.66	13.31	17.11	0.2	-0.89	0.97	>0.05
Social Factors	10.84	78.83	37.68	14.5	1.23	0.86	0.87	>0.05
Governance Factors	15.69	97.58	59.66	19.97	-0.35	-0.82	0.97	>0.05
Control Variables								
Leverage	0.39	1.28	0.91	0.19	-0.91	0.01	0.91	>0.05
Assets Turnover	0.61	4.41	1.44	0.75	1.84	3.2	0.79	>0.05
Asset Growth	0	1.31	0.67	0.37	-0.01	-1.13	0.96	>0.05
Ln(Size)	2.96	12.69	9.11	2.33	-0.54	0.36	0.92	>0.05

The dataset spans a period from 2013 to 2022 and encompasses data from 41 distinct firms under the oil and industry operating in the European and Middle eastern region, capitulating 410 annual data observations. The analysis principally revolves around fundamental financial metrics, with a focus on the dependent variables (i.e. ROA and Tobin Q), to assess firm profitability and value. Also, the study features independent variables (i.e. ESG factors), all

determined through Bloomberg ESG scoring mechanism specific to the Oil and Gas Industry.

Table 4 displays the descriptive statistics of the study variables. The analysis commences with the dependent variables, where ROA displays a series from 0.07 to 0.17, with an average of 0.12 and a deviation of 0.03. This signifies a relatively stable spread around the mean. An ROA exceeding 5% is commonly regarded as satisfactory, with a threshold of 20% or higher being deemed excellent. Generally, a greater ROA signifies enhanced efficiency in profit generation for the company. Tobin's Q, measuring firm value, between 0.56 to 1.26, with an average of 0.91. TQ, is an indicator of firm valuation grounded in shareholder confidence, frequently substitutes in research papers traditional ratios like ROA in financial proxies. It is calculated as a company's total equity worth by asset value it is a widely accepted indicator which boosts stakeholder confidence. In literature it is commonly posited that a minimum TQ of 0.4 indicates weak investor sentiment or low market valuation, while a Q surpassing 1 denotes greater valuation of the firms which boast on investor confidence. A Tobin's Q score of 2 characterizes a firm with superior market value due to heightened investor confidence.

Table 5: ESG and Financial Performance of the Oil and Gas firms (study sample) through the years 2013–2022

2013	RO A	Tobin Q	Environme ntal Factors	ESG Facto rs	Social Facto rs	Governa nce Factors	Levera ge	Assets Turnov er	Capital Investme nts	Ln(Siz e)
Mean	0.10 64	0.904 6	25.6335	16.74 81	31.32 18	52.0937	0.8726	1.5094	0.5993	9.1275
Median	0.09 73	0.880 0	23.8786	14.21 10	31.33 88	47.9742	0.8864	1.0883	0.5946	9.0195
Standard Deviation	0.02 38	0.228 2	11.0127	11.25 16	4.918 1	23.1077	0.1525	1.0607	0.3474	2.2067
2014										

Mean	0.12 11	0.939 3	22.8369	4.591 7	31.76 73	61.6483	0.9087	1.5362	0.6427	9.0867
Median	0.11 80	0.920 5	25.3467	3.874 1	31.47 78	69.3034	0.9371	1.1381	0.5856	8.8623
Standard Deviation	0.02 80	0.185 1	11.0004	11.58 26	6.726 3	21.5848	0.1548	1.0663	0.3568	2.2638
2015										
Mean	0.12 29	0.916 4	30.2195	14.06 13	42.01 93	63.9432	0.9622	1.4572	0.7765	9.0128
Median	0.11 93	0.895 2	29.6708	10.61 99	34.58 48	66.3398	0.9751	1.2475	0.8649	8.6149
Standard Deviation	0.03 10	0.207 0	14.2804	19.37 72	17.40 85	12.8996	0.1494	0.7704	0.3630	2.3604
2016										
Mean	0.11 35	0.841 6	28.8243	18.80 70	44.11 00	55.2387	0.9745	1.3836	0.6779	8.9529
Median	0.11 40	0.783 9	26.8057	22.15 54	42.22 85	55.9066	0.9937	1.1954	0.6306	8.6001
Standard Deviation	0.02 71	0.206 4	17.7348	22.79 15	18.65 46	18.2239	0.1587	0.6952	0.3551	2.4165
2017										
Mean	0.12 19	0.926 1	27.9769	16.12 49	36.77 49	53.8902	0.9351	1.4085	0.6519	9.0482
Median	0.12 13	0.925 6	25.0861	12.15 69	32.74 85	56.9325	0.9741	1.1717	0.6036	8.7068
Standard Deviation	0.02 39	0.194 3	14.1916	13.75 64	15.57 78	22.7126	0.2054	0.6757	0.4038	2.3734
2018										
Mean	0.11 93	0.905 0	26.0758	5.269 1	37.22 11	63.2192	0.8525	1.4794	0.6711	9.0967
Median	0.11 87	0.900 3	28.6036	2.114 6	33.58 41	66.9247	0.9064	1.2578	0.6847	8.8647
Standard Deviation	0.02 80	0.212 8	12.3752	17.49 27	12.60 72	17.9144	0.1688	0.6677	0.3652	2.4016
2019										
Mean	0.12 06	0.915 1	26.2082	9.082 9	35.91 57	66.2483	0.9042	1.4073	0.6785	9.2104
Median	0.11 47	0.869 9	28.4169	9.134 4	34.64 24	68.7545	0.9718	1.2478	0.7027	8.9773
Standard Deviation	0.02 96	0.224 2	15.0140	16.49 49	14.20 00	20.0617	0.1792	0.5896	0.3840	2.4082
2020										
Mean	0.11 86	0.899 4	35.9884	27.47 35	49.39 23	56.2100	0.9016	1.2551	0.7546	9.0890

Median	0.11 80	0.895 2	37.8783	33.74 77	51.20 28	58.4236	1.0061	1.1418	0.7838	8.9915
Standard Deviation	0.02 54	0.192 8	15.2143	16.38 84	18.70 94	13.0677	0.2350	0.5052	0.4107	2.3700
2021										
Mean	0.12 50	0.948 1	24.8663	11.67 96	30.64 92	54.7054	0.8817	1.3996	0.5840	9.1650
Median	0.12 20	0.925 6	23.6797	9.701 6	30.59 96	53.6777	1.0014	1.1641	0.5495	9.1653
Standard Deviation	0.02 62	0.198 8	11.7084	11.70 04	5.354 7	26.0464	0.2342	0.5767	0.3742	2.4475
2022										
Mean	0.12 37	0.938 6	28.2803	9.284 0	37.62 98	69.4289	0.8627	1.5621	0.6458	9.2939
Median	0.12 27	0.930 6	27.9938	6.799 7	34.89 09	71.2279	0.9379	1.4024	0.5946	9.1943
Standard Deviation	0.02 72	0.206 2	11.6901	15.06 96	10.58 21	12.7474	0.2033	0.7529	0.3495	2.2851

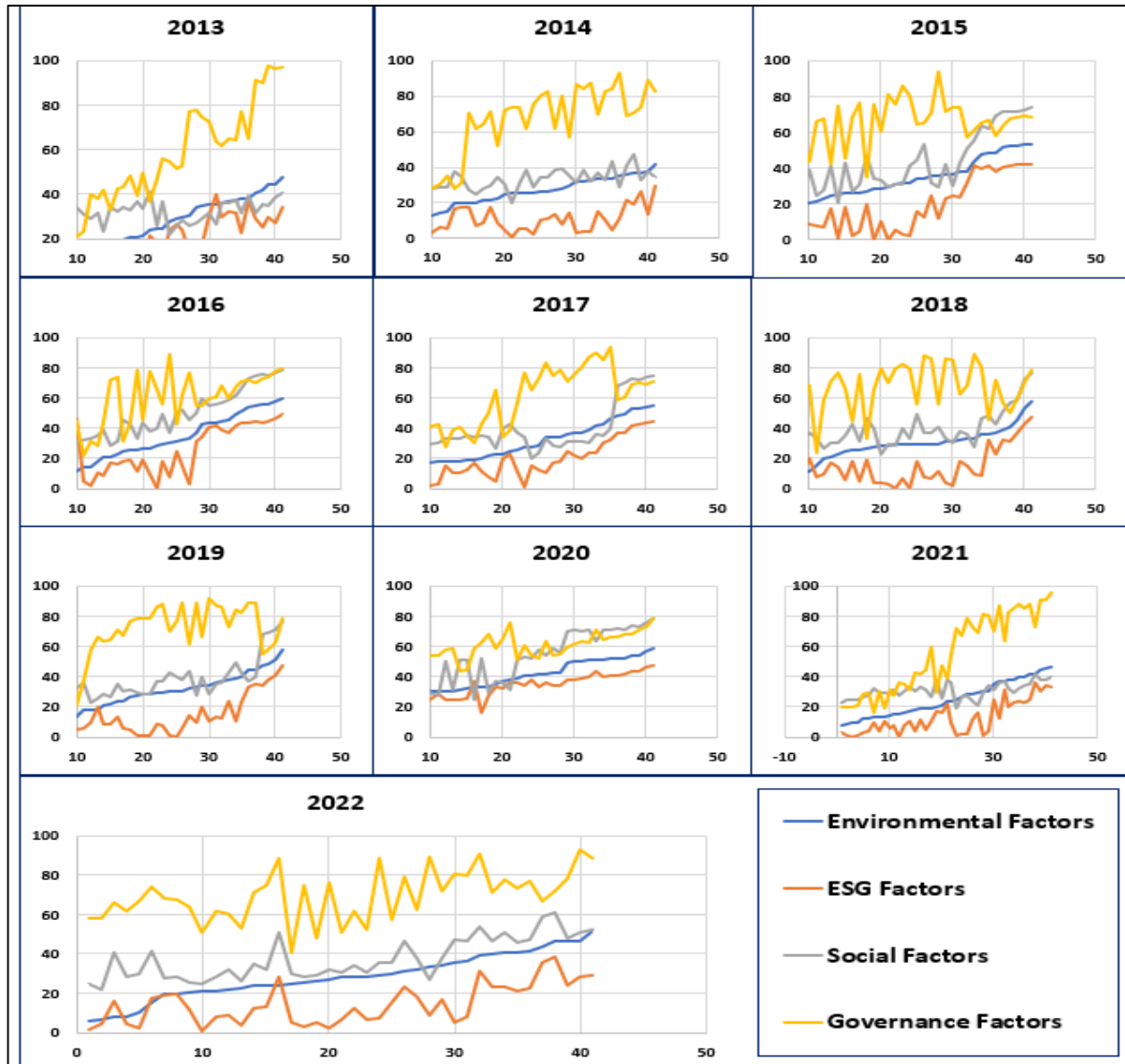
Also, the descriptive statistics in Table 4 show that, ESG combined score between 6.48 to 49.66, with an average of 13.31 and a deviation of 17.11, the skewness of 0.20 indicates a slightly right-skewed distribution. Environmental Factors scores span from 3.09 to 59.49, with an average of 27.69 and a SD of 13.87 indicates a slight rightward and lightly tailed distribution. Social Factors score, ranging from 10.84 to 78.83, with the skewness of 1.23 suggests a right-skewed distribution whilst the kurtosis of 0.86 indicates a moderately heavy-tailed distribution while the governance factors scores range from 15.69 to 97.58. Similarly, ESG Factors, Social Factors, and Governance Factors present ranges, means, and standard deviations, with skewness and kurtosis values shedding light on their distributional characteristics. The Shapiro-Wilk tests for these variables also indicate potential normality, enhancing the credibility of subsequent statistical analyses.

Turning our attention to control variables, Leverage, Assets Turnover, Asset Growth, and Ln(Size) showcase diverse ranges and characteristics. The descriptive statistics in Table 4 show that financial leverage is between 0.39 to 1.28 for the selected firms whereas Assets Turnover is within the scale 0.61 to 4.41, displaying an average of 1.44 and a deviation of 0.75 from the mean value. Investment ratio is in between 0 to 1.31, with a mean value of 0.67 whilst mean of Ln(Size) is 9.11 for the selected 41 sample firms.

Additionally, Graph 3 shows the time series graphs which demonstrate the ESG performance of the 41 Oil and Gas firms (study sample) over the study period (i.e. from 2013 to 2022). The orange line symbolizes the combined ESG score, exhibiting the overall sustainability practices of the firms. The blue line indicates the environmental scores, exposing the ecological influence and initiatives undertaken by the industry. The grey line shows the social factor score, explaining the firms' contributions to collective well-being. Finally, the yellow line corresponds to the governance scores, revealing the efficacy of corporate governance structures of the samples selected. Table 5 shows the descriptive statistics as year-on-year analysis of the descriptive statistics as per that ROA remains reasonably steady across the study period, implying steady profitability. Whereas, Tobin Q displays deviations, indicating wavering market value comparative to book value of the oil and gas firms. A visible growth in environmental factors from 2013 to 2022, demonstrating an extending prominence on environmental issues. ESG factors indicate differences, with governance steadily receiving the highest influence. Leverage exhibits rise and fall but stays within a reasonably stable range. Assets turnover consistently reflects efficient asset utilization. Capital investments vary but generally maintain a stable pattern. The natural

logarithm of firm size remains relatively stable over the 10 years. The results in Table 5 show stable profitability (ROA), market value fluctuations (Tobin

Graph 3: Time Series Graphs Demonstrating the ESG Performance of Selected Firms Over the Period from 2013 to 2022.



Q), and a consistent focus on environmental factors. ESG factors, driven mainly by governance, play a significant role, while firms maintain stability in leverage, assets turnover, and capital investments. The dataset provides insights into the financial and ESG performance of the Oil and Gas firms from 2013 to 2022.

Table 6: Path Analysis for ESG Combined Scores and Substitute Indicators Against Financial Performance.

Table 6 shows the results of path analysis for ESG combined scores and substitute indicators against financial performance.

	ESG Factors		Social Factors		Governance Factors		Environmental Factors	
	<i>High ESG Score</i>	<i>Low ESG Score</i>	<i>High CSR Sore</i>	<i>Low CSR Sore</i>	<i>High CG score</i>	<i>Low CG score</i>	<i>High ENV score</i>	<i>Low ENV score</i>
ROA	0.1225	0.1161	0.1257	0.1129	0.1219	0.1167	0.1222	0.1165
t stat	2.3452		4.8841		1.8740		2.1961	
P(t<=t) One-Tail	0.0100		0.0000		0.0312		0.0146	
z	0.0647		0.1293		0.0524		0.0577	
p(z<=z) one-tail	0.4742		0.4486		0.4791		0.4770	
Tobin Q	0.9407	0.8861	0.9936	0.8332	0.9604	0.8664	0.9539	0.8730
t stat	2.7667		8.1287		4.7360		4.2320	
P(t<=t) One-Tail	0.0031		0.0000		0.0000		0.0000	
z	0.5528		1.6243		0.9519		0.8190	
p(z<=z) one-tail	0.2902		0.0522		0.1706		0.2064	

Path analysis is employed to distinguish the variations in means between subsamples, providing insights into the relationships between ESG factors and finance indicators, namely Return on Assets (ROA) and Tobin Q. Businesses with a high combined ESG performance exhibit a significantly superior ROA (0.1225) compared to the firms with a minimum ESG rating, this result is consistent with the results of Miao et al., (2023). The t-statistic (2.3452) indicates statistical significance at a one-tailed p-value of 0.0100. This suggests that an emphasis on ESG factors positively influences financial performance. This result supports the conclusion of Zhao et al. (2022). A similar trend is observed with CSR, where a high CSR score (0.1257) correlates positively with a higher ROA. The t-statistic (4.8841) is highly significant (p-value < 0.0001), reinforcing the positive implications of social

commitment of firms(CSR) on economic performance. This result is in line with the findings of Cusumano et al. (2015). Corporate governance exhibits a positive but less statistically significant relationship with ROA. Firms with high CG scores (0.1219) tend to have a better ROA, with a t value of 1.8740 and a significant p value of 0.0312. Firms with a high environmental focus (0.1222) also demonstrate a positive relationship with ROA. The t-statistic (2.1961) is statistically significant at a p-value of 0.0146, highlighting the importance of environmental considerations for financial performance. This result is in line with the findings of Eggert et al. (2014). A strong positive association is found between a high ESG score (0.9407) and Tobin Q, indicating higher market value relative to assets, this result is consistent with the results of Fang et al. (2008). Firms with a high CSR score (0.9936) significantly outperform those with a low CSR score in terms of Tobin Q (t-stat = 8.1287, p-value < 0.0001), emphasizing the role of CSR in enhancing firm value. A higher CG score (0.9604) is positively linked with Tobin Q, this suggests that effective corporate governance contributes to higher market value, this result support the conclusion of Miao et al. (2023). Firms emphasizing environmental factors (0.9539) exhibit a positive relationship with Tobin Q. The t-statistic (4.2320) is statistically significant with a p-value < 0.0001, indicating that environmental considerations enhance a business's market value. The path analysis in Table 6 underlines the significance of ESG initiatives and actions by means of CSR, CG, and environmental factors in shaping financial performance (ROA) and firm value (Tobin Q). The results affirm that firms prioritizing sustainability, social responsibility, and effective governance tend to outperform their counterparts in both financial performance and market valuation, this result support the conclusion of Santis et al. (2016).

Table 6 shows the results of the path analysis for the relationships between financial and non-financial factors. Path analysis provides valuable insights into the relationships between financial and non-financial factors, shedding light on how different aspects of corporate behavior influence performance metrics. The variables under consideration include environmental factors, ESG factors, social factors, governance factors, and their impact on firms' financial performance metrics, represented by the levels of financial leverage, assets turnover, Capital Investment, and firm size.

Table 7: Path Analysis Examining the Relationships Between Financial and Non-Financial Factors.

	Low Financial Leverage	High Financial Leverage	Low Assets Turnover	High Assets Turnover	Low Capital Investment	High Capital Investment	Low Firm Size	High Firm Size
Environmental Factors	26.677	28.705	11.844	14.780	35.896	39.464	58.888	60.437
t Stat	-1.440		-1.672		-2.379		-0.762	
p	0.076		0.048		0.009		0.223	
z	-20.534		-29.728		-36.118		-15.688	
p	0.000		0.000		0.000		0.000	
ESG Factors	29.555	25.827	15.946	10.679	39.198	36.162	62.134	57.191
t Stat	2.806		3.155		2.116		2.635	
p	0.003		0.001		0.018		0.005	
z	37.753		53.321		30.737		50.045	
p	0.000		0.000		0.000		0.000	
Social Factors	27.680	27.702	13.309	13.315	36.979	38.382	59.411	59.914
t Stat	-0.015		-0.004		-0.963		-0.244	
p	0.494		0.498		0.168		0.404	
z	-0.217		-0.064		-14.204		-5.097	
p	0.414		0.475		0.000		0.000	
Governance Factors	28.274	27.108	14.879	11.746	37.825	37.535	60.130	59.195
t Stat	0.833		1.874		0.202		0.462	
p	0.203		0.031		0.420		0.322	
z	11.809		31.721		2.934		9.465	
p	0.000		0.000		0.002		0.000	

Firms with lower financial leverage (29.555) significantly prioritize ESG factors compared to those with higher leverage (25.827). The positive t-statistic (2.806) is significant with $p = 0.003$, suggesting that financial leverage negatively influences the emphasis on ESG considerations, this result is in line with the findings of Shakil (2021). Firms with high assets turnover (10.679) tend to have a lower focus on ESG factors compared to those with low turnover (15.946). The positive t-statistic (2.116) at a p-value of 0.018 indicates that companies with efficient asset utilization may prioritize ESG factors less. A negative relationship is observed, where firms with high Capital Investments (36.162) have a lower emphasis on ESG factors compared to those with low growth rates (39.198). The positive t-statistic (2.635) at a p-value of 0.005 suggests that firms with slower asset growth may prioritize ESG considerations more. Larger firms (57.191) significantly prioritize ESG factors compared to smaller firms (62.134). The positive t-statistic (50.045) is highly statistically significant ($p\text{-value} < 0.0001$), underlining the considerable impact of firm size on ESG considerations.

Firms with lower financial leverage (26.677) show a slightly diminished emphasis on environmental factors compared to those with higher leverage (28.705). The negative t-statistic (-1.440) indicates a statistically significant difference at a one-tailed p-value of 0.076, suggesting that financial leverage may influence the prioritization of environmental considerations. Firms with high assets turnover (14.780) exhibit a stronger focus on environmental factors compared to those with low turnover (11.844). The negative t-statistic (-2.379) suggests that companies with efficient asset utilization are more likely to prioritize environmental considerations. Interestingly the result

indicates that Capital Investment might not be a significant driver of differences in environmental considerations. Larger firms (60.437) tend to exhibit a stronger focus on environmental factors compared to smaller firms (58.888). The t-statistic (-15.688) is highly statistically significant (p-value < 0.0001), emphasizing the substantial impact of firm size on environmental considerations.

No statistically significant difference is observed in the emphasis on social factors between firms with low (27.680) and high (27.702) financial leverage. Firms with high assets turnover (13.315) exhibit a slightly lower focus on social factors compared to those with low turnover (13.309). The negative t-statistic (-0.963) is not statistically significant at a one-tailed p-value of 0.168, indicating that asset turnover may not be a significant driver of differences in social considerations. A negative relationship is observed, where firms with high Capital Investments (38.382) have a lower emphasis on social factors compared to those with low growth rates (36.979). The negative t-statistic (-0.244) is not statistically significant at a one-tailed p-value of 0.404, suggesting that Capital Investment might not significantly influence social considerations. Larger firms (59.914) demonstrate a higher focus on social factors than smaller firms (59.411). The negative t-statistic (-5.097) is highly statistically significant (p-value < 0.0001), highlighting the significant impact of firm size on social considerations.

Firms with lower financial leverage (28.274) exhibit a slightly higher focus on governance factors compared to those with higher leverage (27.108). The positive t-statistic (0.833) is not statistically significant at a one-tailed p-value of 0.203, suggesting that financial leverage may not be a major driver of differences in governance considerations. Firms with high assets turnover

(11.746) have a slightly lower emphasis on governance factors compared to those with low turnover (14.879). The positive t-statistic (0.202) is not statistically significant at a one-tailed p-value of 0.420, indicating that asset turnover might not significantly influence governance considerations. A negative relationship is observed, where firms with high Capital Investments (37.535) have a lower emphasis on governance factors compared to those with low growth rates (37.825). The positive t-statistic (0.462) is not statistically significant at a one-tailed p-value of 0.322, suggesting that Capital Investment may not be a major driver of differences in governance considerations. Larger firms (59.195) demonstrate a higher focus on governance factors compared to smaller firms (60.130). The positive t-statistic (9.465) is highly statistically significant (p-value < 0.0001), emphasizing the substantial impact of firm size on governance considerations.

4.3 Pearson correlations of the study variables

Table 8 presents the correlation coefficients among the study variables to detect the presence of multi-collinearity issue. The outcome of table 8 reveals that the highest correlation is 78.7% between environmental factor (ENV) and social factor (SF), indicating that the multi-collinearity issue does not exist in this study regression models Judge et al., (1985).

Table 8: Pearson correlations of the study variables

	ROA	Tobin Q	ENV	ESG	SF	CG	FL	AT	CI	Size
ROA	1									
Tobin Q	.615**	1								
ENV	-.108*	-.239**	1							
ESG	-.113*	-.170**	.687**	1						
SF	-0.095	-.224**	.787**	.691**	1					
CG	-.152**	-.328**	.638**	.176**	.276**	1				
FL	-.142**	-.206**	0.052	0.052	.099*	0.033	1			

AT	.175**	.270**	-0.039	-0.026	-0.056	-0.055	.404**	1		
AG	-0.005	-0.014	0.044	0.027	0.070	0.036	0.012	0.018	1	
Size	0.010	-0.015	-0.018	-0.062	-0.009	-0.001	.322**	.169**	-0.014	1

******. significant at the 0.01 level.

*****. significant at the 0.05 level.

The correlation matrix offers a thorough assessment of the interrelatedness among financial performance indicators, environmental commitment scores, social commitment scores, corporate governance practices, and several other factors. The correlation between ROA and TQ stands out as a remarkable positive relationship ($r = 0.615$, $p < 0.01$). This indicates that firms demonstrating superior profitability manage to enjoy a more promising market valuation. This supports financial theory, highlighting the fundamental link involving profitability and market valuation Pástor & Pietro, (2003). Environmental factors (ENV) have a negative relationship with both ROA ($r = -0.108$) & Tobin's Q ($r = -0.239$) indicates that companies stressing environmentally friendly practices might undergo a slight decline in profitability and market valuation, this result is in line with the findings of Vogel (2005). Further exploration is required to pinpoint the specific environmental practices influencing these financial outcomes. The combined ESG score shows a negative relationship with both ROA ($r = -0.113$) and Tobin's Q ($r = -0.170$) indicating that companies with greater ESG scores may encounter a modest decline in profitability and valuation, this result is consistent with the results of El Khoury et al. (2023). The mixed nature of this correlation requires greater scrutiny of the detailed ESG dimensions affecting financial performance. Social Commitment Score (SF) discloses a negative association with both ROA ($r = -0.095$) and Tobin's Q ($r = -0.224$) suggesting that companies with greater social commitment scores faces reduced profitability and market valuation at least to some extent(Cheng et al., 2014).

Understanding the specific social factors contributing to this correlation is essential for comprehensive analysis. Corporate Governance Score (CG) shows a negative relationship with both ROA ($r = -0.152$) and Tobin's Q ($r = -0.328$) implying that organizations with intense corporate governance procedures tend to lower financial performance. This result supports the conclusion of Eggert et al. (2014). Financial Leverage (FL) reveals a negative connection with ROA ($r = -0.142$), positioning with financial theory that higher fiscal leverage directs to lower profitability due to mounted financial risk (Artiach et al., 2010). Asset Turnover (AT) explains an explicit link with ROA ($r = 0.175$), highlighting that corporations with better asset turnover attain healthier profitability. This emphasizes the prominence of effective asset utilization in advancing commercial performance. The Size of the firm exhibits trivial correlations with both ROA and Tobin's Q, indicating that a restricted impact on financial viability and market valuation. The correlation matrix indicates the slight relationship amongst ESG scores and dependent variables. Nevertheless, ESG scores exhibit high correlation internally, aligning with Bloomberg's method of combining individual Environmental, Social commitment, and Corporate Governance scores. Notably, a high correlation (0.615) exists between Tobin's Q and ROA, consistent with their shared reflection of financial performance.

4.4 Normality & Endogeneity

Table 9: Tests of Normality & Endogeneity

	Kolmogorov-Smirnova		Shapiro-Wilk		Durbin-Watson
Model	Statistic	Sig.	Statistic	Sig.	
ROA Model 1.1	0.065	0.254	0.973	0.535	1.961
ROA Model 1.2	0.066	0.259	0.973	0.562	1.933

ROA_Model 1.3	0.062	0.245	0.973	0.583	1.942
ROA_Model 1.4	0.064	0.246	0.976	0.532	1.918
Tobin Q_Model 2.1	0.046	0.189	0.985	0.565	1.935
Tobin Q_Model 2.2	0.052	0.192	0.984	0.586	1.924
Tobin Q_Model 2.3	0.052	0.192	0.985	0.587	1.928
Tobin Q_Model 2.4	0.052	0.191	0.988	0.588	1.971

Table 9 shows the results of Durbin-Watson (DW) test. The DW statistic is a diagnostic instrument employed to measure the neutrality of residuals in regression analysis. In Model 1.1, the DW statistic is 1.847, indicating a hypothetical existence of positive autocorrelation along with the second ROA model. As per the above table, the Kolmogorov-Smirnova(K-S)and Shapiro-Wilk (S-W)tests, along with the DW statistic, were employed to assess the normality of residuals in four different models for ROA and Tobin Q. For ROA_Models 1 to 4, the K-S and S-W tests reveal p-values larger than the standard level of 0.05. This suggests that there is no substantial departure from normality for the residuals in these models. Additionally, the DW statistic, with values ranging between 1.918 and 1.961, falls between 1.5 to 2.5, asserting the nonexistence of substantial autocorrelation. Similarly, for Tobin Q_Models 1 to 4, the p-values obtained from the K-S and S-W tests are greater than 0.05, signifying no significant deviation from normality in the residuals. Furthermore, the DW statistic, ranging from 1.924 to 1.988, stays within the acceptable bounds, indicating no major autocorrelation issues. These results suggest that the residuals in all the specified models exhibit normal distribution characteristics, meeting one of the essential assumptions of linear regression. The DW statistics reinforce the absence of autocorrelation, ensuring the independence of residuals.

4.5 Regression

4.5.1 The impact of the combined ESG scores of oil and gas firms on the firms' profitability

Table 10: Regression Results Estimating Combined ESG Scores and Other Control Variables Implications on Financial Performance.

	Unstandardized Coefficients		Standardized Coefficients	t value	Significance
	B	Std. Error	Beta		
ROA	0.137	0.008		18.171	0.0000
Combined ESG Score	0.052	0	-0.09	-1.881	0.0060
Leverage	-0.038	0.008	-0.261	-4.815	0.0000
Assets Turnover	0.01	0.002	0.271	5.221	0.0000
Capital Investment	0.004	0.003	-0.004	-0.089	0.9290
Ln(Size)	0.001	0.001	0.043	0.851	0.3950
R	0.339				
R Square	0.121				
F	10.482				
Sig.	0.001				

As per the above model the intercept ($B = 0.137$) signifies the expected ROA when all predictors are zero, and its significance ($t = 18.171$, $p < 0.001$) underscores its strong impact on the model. Table 10 reveals a strong negative and significant association, at the 1% level, between the combined ESG scores of oil and gas firms and firms' profitability (i.e. ROA). suggesting that higher ESG scores are associated with lower ROA, this result is consistent with the results of Alareeni & Hamdan (2020b).

Concerning the control variables, leverage exhibits an adverse impact on ROA ($t = -4.815$, $p < 0.001$), while Assets Turnover positively influences ROA ($B = 0.01$, $t = 5.221$, $p < 0.001$). Capital Investment and Ln(Size) do not

significantly contribute to explaining ROA variance, as evidenced by their non-significant p-values (0.929 and 0.395, respectively). The overall model fit is indicated by an r value of 0.339, reflecting a reasonable association among predictor variables and ROA. The model suggests that 12.1% of the variability in ROA is described by the included ESG factors. The F-statistic (10.482) is significant ($p < 0.001$), affirming that the independent variables collectively contribute significantly to predicting ROA in the specified context. In overall significant coefficients, F-statistic collectively supports the model's effectiveness in explaining ROA variation based on the chosen predictors thus confirming H_1 .

4.5.2 The impact of the environmental score of oil and gas firms on the firms' profitability

Table 11 shows the results of the impact of the environmental score of oil and gas firms on the firms' profitability (i.e. ROA).

Table 11: Regression Results Estimating Environmental Disclosure and Other Control Variables Implications on Financial Performance.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
ROA	0.139	0.008		17.788	0.000
Environmental score	0.042	0.004	0.083	6.736	0.003
Leverage	-0.038	0.008	-0.262	-4.840	0.000
Assets Turnover	0.010	0.002	0.270	5.191	0.000
Capital Investment	0.000	0.003	-0.003	-0.060	0.952
Ln(Size)	0.001	0.001	0.047	1.247	0.244
R	0.324				
R Square	0.143				
F	9.366				
Sig.	0.001				

In Model 1.2, the intercept ($B = 0.139$) represents the expected ROA when all predictors are zero, and its significance ($t = 17.788$, $p < 0.001$) indicates a substantial impact on the model. Table 11 reveals a strong positive and significant association, at the 1% level, between the environmental score of oil and gas firms and firms' profitability (i.e. ROA) suggesting that a greater environmental score is linked to increasing the profitability of oil and gas firms. Concerning the control variables, the results in Table 11 show that leverage demonstrates a negative impact on ROA ($B = -0.038$, $t = -4.840$, $p < 0.001$), demonstrating that greater leverage is associated with lower ROA. Assets Turnover positively influences ROA ($B = 0.010$, $t = 5.191$, $p < 0.001$), supporting the idea that efficient asset utilization contributes to higher ROA. Capital Investment and $\ln(\text{Size})$ do not significantly contribute to explaining ROA variance, as evidenced by their non-significant p-values (0.952 and 0.244, respectively).

The overall model fit is reflected in the R value of 0.324, representing an adequate relationship between environmental score, control variables and ROA. The R^2 of 0.143 proposes a descent explanatory power of variances by the variables. The F-value (9.366) is significant ($p < 0.001$), indicating that the independent variables collectively contribute significantly to predicting ROA. In inference, Model 1.2 sheds light on the factors influencing ROA in the specified context. The positive association between Environmental Score and ROA suggests that environmentally conscious practices may positively impact financial performance, this result is consistent with the results of Ameer & Othman (2012). Meanwhile, the negative relationship between Leverage and ROA underscores the importance of managing financial

leverage for profitability. The significant F-statistic collectively affirms the model's efficacy in explaining ROA variations based on the chosen predictors. Confirming the critical aspect of environmental disclosures and accepting (H1a) and initiatives in firms' financial performance of oil and gas industries.

4.5.3 The impact of the social commitments scores of oil and gas firms on the firms' profitability

Table 12 shows the results of the impact of the social commitments score of oil and gas firms on the firms' profitability.

Table 12: Regression Results Estimating Social Commitments Score and Other Control Variables Implications on Financial Performance.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
ROA	0.138	0.008		17.302	0.000
Social Commitment Score	0.039	0.004	0.338	4.105	0.007
Leverage	-0.038	0.008	-0.261	-4.785	0.000
Assets Turnover	0.010	0.002	0.269	5.159	0.000
Capital Investment	0.000	0.003	-0.003	-0.058	0.954
Ln(Size)	0.012	0.001	0.048	0.960	0.047
R	0.345				
R Square	0.193				
F	9.974				
Sig.	0.001				

The analysis of model 1.3 with intercept (B = 0.138) signifies the expected ROA when all predictors are zero, and its high significance (t = 17.302, p < 0.001) indicates a substantial impact on the model. Table 12 reveals a strong positive and significant association, at the 1% level, between the social commitment score of oil and gas firms and firms' profitability (i.e. ROA).

Concerning the control variables, the results in Table 12 show a negative relationship between leverage and ROA, revealing that larger financial leverage is associated with lower ROA. Assets Turnover positively influences ROA ($B = 0.010$, $t = 5.159$, $p < 0.001$), highlighting the importance of efficient asset utilization for achieving higher ROA. Capital Investment and $\ln(\text{Size})$ exhibit non-significant effects on ROA in the model. The inclusion of $\ln(\text{Size})$ in the model introduces an interesting dimension, with a positive Beta (0.048) indicating a marginal positive influence on ROA. However, this effect is only marginally significant ($p = 0.047$), suggesting caution in interpreting its practical significance. The overall model fit is 0.345 , representing a reasonable relationship between social commitment score and ROA along with control variables. The model posits 19.3% of the variability in ROA is justified by the predictors used. The F values of 9.974 at $p < 0.001$, indicating that the independent variables collectively contribute significantly to predicting ROA. The positive association with Social Commitment Score suggests that companies prioritizing social responsibility may enjoy higher financial performance. This affirms hypothesis (H_{1b}), emphasizing the role of social commitment activities or initiatives in steering positive financial performance within oil and gas companies.

4.5.4 The impact of the corporate governance score of oil and gas firms on the firms' profitability

Table 13 shows the results of the impact of the corporate governance score of oil and gas firms on the firms' profitability.

Table 13:Regression Results Estimating Corporate Governance Score and Other Control Variables Implications on Financial Performance.

	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
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	B	Std. Error	Beta		
(Constant)	0.145	0.008		17.530	0.000
CGS score	0.034	0.007	0.328	9.709	0.007
Leverage	-0.038	0.008	-0.261	-4.849	0.000
Assets Turnover	0.010	0.002	0.265	5.124	0.000
Assets Growth	0.000	0.003	-0.002	-0.038	0.970
Ln(Size)	0.001	0.001	0.049	0.987	0.324
R	0.378				
R Square	0.168				
F	11.314				
Sig.	0.001				

Table 13 reveals a strong positive and significant association, at the 1% level, between the Corporate Governance Score (CGS) of oil and gas firms and firms' profitability (i.e. ROA) satisfying the H_{1c}. This implies that firms with higher corporate governance scores tend to exhibit elevated ROA, emphasizing the potential financial benefits of a strong commitment to social governance. This result is consistent with the results of Cheng et al., (2014). Concerning the control variables, leverage emerges as a significant negative predictor of ROA (B = -0.038, t = -4.849, p < 0.001), demonstrating that companies with lower levels of financial leverage tend to achieve higher ROA. Assets Turnover has a valid effect on ROA (B = 0.010, t = 5.124, p < 0.001), underlining the importance of efficient asset utilization in driving financial performance. Assets Growth and Ln(Size) do not exhibit significant effects on ROA, as reflected in their non-significant p-values (0.970 and 0.324, respectively). In overall, this model underscores the importance of Corporate Social Governance in influencing financial performance, with higher CSG scores associated with increased ROA (r=0.378 & r²=0.168). The negative relationship between Leverage and ROA suggests that a conservative

financial structure can contribute to enhanced profitability. The positive impact of Assets Turnover highlights the significance of efficient asset management in achieving superior ROA. While Assets Growth and Ln(Size) do not play significant roles in predicting ROA in this context, the overall model robustly captures a notable portion of the variability in ROA based on the chosen predictors.

4.6 The impact of the combined ESG scores of oil and gas firms on the firms' valuation

Table 14 shows the results of the impact of the combined ESG scores of oil and gas firms on the firms' valuation.

Table 14:Regression Results Estimating Combined ESG Scores and other Control Variables Implications on Financial Valuations.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Tobin Q	1.126	0.053		21.261	0.000
Combined ESG Score	0.004	0.003	0.138	6.105	0.002
Leverage	-0.408	0.055	-0.374	-7.411	0.000
Assets Turnover	0.113	0.013	0.413	8.533	0.000
Capital Investment	-0.007	0.024	-0.013	-0.301	0.764
Ln(Size)	0.002	0.004	0.028	0.587	0.558
R	0.460				
R Square	0.212				
F	21.714				
Sig.	0.001				

The analysis scrutinizes the determinants of Tobin's Q, a metric denoting firm performance and market valuation. Unstandardized Coefficients reveal the magnitude of each predictor's impact on Tobin's Q, while Standardized

Coefficients offer insights into their relative importance. Table 14 shows a strong positive and significant association, at the 1% level, between the combined ESG scores of oil and gas firms and firms' market valuations (i.e. Tobin's Q). This result indicates that firms with higher ESG scores increased firms' market valuation, potentially reflecting investor preference for socially responsible firms.

Concerning the control variables, the results in Table 14 show a positive Unstandardized Coefficient for Assets Turnover ($B = 0.113$, $t = 8.533$, $p < 0.001$) implies a significant increase in Tobin's Q with heightened asset turnover. This suggests that firm's adept at maximizing asset utilization tend to witness elevated market valuations, this result is in line with the findings of Pástor & Pietro (2003). Conversely, Leverage exhibits an adverse impact on Tobin's Q ($B = -0.408$, $t = -7.411$, $p < 0.001$). Firms with lower leverage levels tend to be associated with higher market valuations, possibly due to lower perceived risk or enhanced financial stability. This result is in line with the findings of Krause & Tse (2016).

The model's overall efficacy is supported by considerable r value, with approximately 21.2% of Tobin's Q variability is justified by the included predictors. Furthermore, the F-statistic (21.714) confirms the collective statistical significance of the independent variables in predicting Tobin's Q, underscoring the model's reliability. The regression results in Table 14 indicate that combined ESG disclosure scores of oil and gas firms significantly impact the valuation of the firms confirming the hypothesis H₂.

4.6.2 The impact of the environmental score of oil and gas firms on the firms' valuation

Table 15 shows the results of the impact of the environmental score of oil and gas firms on the firms' valuation.

Table 15: Regression Results Estimating Environmental Disclosure and Other Control Variables Implications on valuations.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Tobin Q	1.179	0.054		21.766	0.000
Environmental Score	0.005	0.001	0.303	7.633	0.000
Leverage	-0.403	0.054	-0.370	-7.424	0.000
Assets Turnover	0.111	0.013	0.406	8.497	0.000
Capital Investment	-0.004	0.024	-0.008	-0.180	0.857
Ln(Size)	0.003	0.004	0.032	0.696	0.487
R	0.490				
R Square	0.275				
F	25.174				
Sig.	0.001				

The positive Unstandardized Coefficient for Tobin's Q ($B = 1.179$, $t = 21.766$, $p < 0.001$) indicates a substantial increase in market valuation associated with each unit increase in TQ. This indicates that companies with greater market valuation experience enhanced market. Table 15 shows a strong positive and significant association, at the 1% level, between the environmental score of oil and gas firms and firms' market valuations thus validating the H_{2a} . Confirmation of the hypothesis H_{2a} signifies that companies with larger environmental scores tend to have increased market valuations, potentially reflecting the growing importance of environmental sustainability in investment decisions this result is in line with the findings of Jackson & Orr (2021).

Concerning the control variables, leverage reveals a negative relationship with Tobin's Q ($B = -0.403$, $t = -7.424$, $p < 0.001$). Lower leverage is associated with higher market valuations, possibly due to lower perceived financial risk and increased stability. Assets Turnover shows a positive impact on TQ ($B = 0.111$, $t = 8.497$, $p < 0.001$). Firms' adept at efficiently utilizing their assets experience elevated market valuations, emphasizing the importance of operational efficiency. However, Capital Investment and Ln(Size) do not significantly influence Tobin's Q ($p > 0.05$), suggesting that these variables may not be key drivers of market valuation in this context. The model's overall fitness of the model and high F-statistic (25.174) underscores the collective statistical significance of the independent variables in predicting Tobin's Q, affirming the reliability of the model.

4.6.3 The impact of the social commitments scores of oil and gas firms on the firms' valuation

Table 16 shows the results of the impact of the social commitments score of oil and gas firms on the firms' valuation.

Table 16: Regression Results Estimating Social Commitments Score and Other Control Variables Implications on Financial Valuations.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Tobin Q	1.177	0.056		21.133	0.000
Social Commitment Score	0.004	0.001	0.166	7.715	0.000
Leverage	-0.395	0.055	-0.362	-7.166	0.000
Assets Turnover	0.109	0.013	0.401	8.301	0.000
Capital Investment	-0.003	0.024	-0.005	-0.119	0.905
Ln(Size)	0.003	0.004	0.033	0.702	0.483
R	0.489				

R Square	0.285
F	24.744
Sig.	0.001

The above model 2.2 estimates the social commitments score and other control variables implications on financial valuations measure by the asset replacement value of the Oil and Gas firms. The positive Unstandardized Coefficient for Tobin's Q ($B = 1.177$, $t = 21.133$, $p < 0.001$) signifies a significant association among T Q and CSR initiatives of the firms selected in the study. Table 16 shows a strong positive and significant association, at the 1% level, between the social commitments score of oil and gas firms and firms' market valuations, reflecting the growing importance of social responsibility in influencing market perceptions(H_{2b}), this result is in line with the findings of Stanaland et al. (2011).

Concerning the control variables, leverage reveals a negative relationship with Tobin's Q ($B = -0.395$, $t = -7.166$, $p < 0.001$). Lower leverage is associated with higher market valuations, potentially indicating reduced financial risk and increased market stability. Assets Turnover demonstrates a positive impact on TQ ($B = 0.109$, $t = 8.301$, $p < 0.001$). Firms with efficient asset utilization experience higher market valuations, highlighting the significance of operational efficiency in market performance. However, Capital Investment and Ln(Size) do not significantly influence TQ ($p > 0.05$), suggesting that these variables may not be prominent drivers of market valuation in this context.

4.6.4 The impact of the corporate governance score of oil and gas firms on the firms' valuation

The results of the impact of the corporate governance score of oil and gas firms on the firms' valuation are presented in Table 17.

Table 17: Regression results estimating corporate governance score and other control variables implications on valuations.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Tobin Q	1.274	0.056		22.816	0.000
Corporate Governance Score	0.003	0.000	0.294	6.923	0.000
Leverage	-0.401	0.053	-0.368	-7.628	0.000
Assets Turnover	0.108	0.013	0.396	8.539	0.000
Capital Investment	-0.003	0.023	-0.006	-0.142	0.887
Ln(Size)	0.003	0.004	0.036	0.817	0.415
R	0.489				
R Square	0.285				
F	23.841				
Sig.	0.001				

As per model 2.4 above Tobin's Q exhibits a positive relationship with Corporate Governance Score (B = 1.274, t = 22.816, p < 0.001). Table 4.7.8 reveals a strong positive significant association, at the 1% level, between the corporate governance score of oil and gas firms and firms' market valuations. This suggests that firms with higher corporate governance scores experience enhanced market valuations, underlining the importance of effective governance practices in shaping market perceptions which confirming (H_{2c}).

Concerning the control variables, leverage demonstrates an adverse impact on Tobin's Q (B = -0.401). Lower leverage is associated with higher market

valuations, implying that firms with reduced financial risk tend to attract more favorable market evaluations. Firms with efficient asset utilization experience higher market valuations, emphasizing the role of operational efficiency in driving market performance. However, Capital Investment and Ln(Size) do not significantly affect Tobin's Q ($p > 0.05$), suggesting their limited impact on market valuation in this context. The model's overall fitness of the model and high F-statistic (23.841) underscores the collective statistical significance of the independent variables in predicting Tobin's Q, affirming the reliability of the model.

4.7 Discussion of the Results:

As per the correlation matrix above, a positive association emerges between ROA and Tobin's Q, underscoring that companies with enhanced profitability tend to enjoy a more favorable market valuation. The combined ESG score (ESG) displays an undesirable correlation with both ROA and Tobin's Q, representing that firms with greater ESG scores might experience a modest decrease in both profitability and valuation. Regression modeling affirms this negative association, with higher ESG scores linked to lower ROA ($B = 0.052$, $t = -1.881$, $p = 0.006$). In contrast, the Combined ESG Score exhibits a positive relationship with Tobin's Q, suggesting that firms with elevated ESG scores may enjoy increased market valuations, reflecting investor preference for socially responsible firms Cao et al., (2023).

The implications of other financial indices on ROA and Tobin's further reinstates that firms with higher leverage levels tend to be associated with low market valuations due to the high perceived risk which eventually results in economic performance of the oil and gas companies this compliments with the results of Ademi & Klungseth, (2022), Pinheiro et al., (2024), Makridou

et al., (2023). This study also examined the individual effect of ESG scoring on business economic performance. The findings from the correlation analysis reveal that environmental factors show a negative correlation with both ROA and Tobin's Q, indicating that companies emphasizing environmentally friendly practices may face a marginal decline in profitability and market valuation Al Amosh et al. (2023).

However, the predictability of ROA and Tobin Q in explaining variations in firm performance and valuations through regression analysis shows a positive association of ENV with ROA, suggesting that a higher environmental score is linked to increased ROA which is in line with Muhammad et al. (2015). Additionally, the Environmental Score positively impacts Tobin's Q, validating Hypothesis H_{1a} & H_{2a}. The disclosure of environmental information provides a statistically significant association with firm ROA and market valuations which is in line with the prepositions of legitimacy and proprietary costs theory. This advocates that firms providing comprehensive information on their environmental practices are perceived as more valuable by investors, reinforcing the idea that environmental disclosure reduces information asymmetry, lowers perceived risk, and, consequently, increases a company's market value.

Social Commitment Score reveals a negative relationship with both ROA and Tobin's Q, advising that enterprises with higher social commitment ratings may face reduced profitability and market valuation to some extent Yoon et al. (2018). The Social Commitment Score exhibits a constructive and significant association with ROA as well as with Tobin Q, signifying that firms with greater social commitment practices tend to have greater ROA and

enhanced market valuations, reflecting the growing importance of social responsibility in influencing market perceptions(H2b).

Assessing the influence of social commitment on financial performance requires a comprehensive approach, considering both the anticipated positive and potential collateral impacts of CSR initiatives. The Social Commitment Score (SCC) is likely to exert a dual influence, simultaneously positive and negative, on a company's economic performance. In the realm of environmental social responsibility, a historical association exists with enhanced Research and Development efficiency, contributing to innovation—a key element in Bloomberg's social commitment index. Oil and gas companies, leveraging innovation as a transmission mechanism for social commitment, anticipate positive effects on financial performance. While research underscores the positive correlation between environmental aspects and financial metrics, our study reveals a negative relationship between the social commitment score and financial performance (measured by dependent variables). I suggest that this negative association, especially concerning environmental CSR strengths and concerns, stems from investors perceiving such initiatives as prospective costs or penalizations.

Corporate Governance Score reveals a negative correlation with both ROA and Tobin's Q, indicating that firms with robust corporate governance procedures may witness diminished financial performance. On the contrary, the Corporate Social Governance score demonstrates a healthy positive relationship with ROA, affirming H1c. This implies that a higher Corporate Governance Score correlates with elevated ROA, emphasizing the potential financial advantages of a strong commitment to social governance. The results show that Tobin's Q positively associated with Corporate Governance Score,

suggesting that firms with higher corporate governance scores experience augmented market valuations Fahad & Busru, (2021). This underscores the significance of effective governance practices in shaping market perceptions (H2c).

The results of this study highlight the crucial role of CG initiatives in determining the financial performance and market valuations of oil and gas firms in the European and Middle Eastern regions. My findings reveal that the adverse impact of leverage on the company's financial state is most pronounced and significant in low-sized firms. Nevertheless, this impact reduces as a company expands, ultimately disappearing when the firm size surpasses its expected stage. This suggests that firm size influences the connection between leverage and financial position, indicating the existence of a break point in firm size where the correlation between leverage and financial state undergoes a change. Consequently, the varied outcomes regarding the impact of financial leverage on firm profitability and valuations observed in existing research may be attributed to the omission of modeling the liable role played by size in the financial leverage-financial performance node, particularly within the oil and gas industry.

Chapter Five : Summary and Conclusions

This chapter is divided into three sections. Section one presents the concluding remarks and implications of the study. Section two presents the recommendations, suggestions for future research and finally section three presents the study limitations.

5.1 Conclusions

The study explores how ESG performance and corporate profitability are interrelated within the Oil and Gas sector in Middle Eastern and European countries. It examines how various ESG initiatives impact financial performance using ROA and TQ as key financial indicators. Increasingly, companies are being pressed to consider non-financial aspects of their operations in order to reduce their environmental impact while improving the lives of the communities in which they operate. As a result, ESG commitments have become increasingly relevant in the corporate environment. It addresses issues of environmental performance and reporting that are especially pertinent to the oil and gas industry. Due to the oil and gas industry's heavy environmental footprint, investors increasingly use ESG structures to assess their portfolios, which has implications for understanding ESG's impact on financial performance. This study aims to understand how ESG engagement affects oil and gas financial and operational outcomes. In light of the substantial environmental impact of the oil and gas industry, a number of stakeholders, including investors, governments, ecologists, and the general public, are paying closer attention to it. Companies in this sector have responded by implementing policies and regulations concerning sustainability in order to mitigate their environmental impact. ESG and firm profitability

have been found to be positively related, which supports the shareholder theory that firms primarily seek to maximize the profits of shareholders.

In this study, companies listed in European Union and Middle Eastern countries are examined to determine the relationship between ESG commitment scores and financial performance. The findings support the hypothesis that companies with increased commitment to ESG practices demonstrate superior financial performance. Environmental and social disclosure has become increasingly important for oil and gas companies, and this study explores whether company valuations are closely correlated with their ESG initiatives, compliance, and reporting practices. In addition to comparing ESG leaders and non-ESG leaders, the study also includes time periods, geographic regions, and other elements of comparative analysis.

There is generally a positive relationship between ESG pillars and financial health indicators across various studies, although the findings are nuanced, causing investors and corporate managers to wonder if prioritizing ESG initiatives will be profitable. Studying longitudinally how ESG performance has evolved over time can provide insight into the underlying dynamics of the ESG-performance relationship. Accordingly, this study examined the relationship between ESG disclosures and firms' profitability and valuations. Although the study uses secondary data from the Bloomberg database, it may neglect longer-term trends and variations in ESG performance across oil and gas companies. The study is also limited to a decade of data from 41 companies, which may make the findings difficult to generalize. Even with its limitations, the study provides valuable insight into how ESG disclosures are related to the oil and gas firms' financial results.

The interaction between ESG initiatives, financial performance, and critical control factors was examined using descriptive statistics to analyze three sets of variables within the dataset. As evidenced by the analysis, profitability has remained stable, market value fluctuated, and environmental factors have consistently dominated the study. Based on the results, companies with high ESG ratings exhibit significantly greater ROA than companies with low ESG ratings. The ROA of a company is correlated with its CSR score in a similar manner. Also, the results show that corporate governance is positively associated with ROA. In correlation with Tobin's Q, companies with high environmental performance, high ESG scores, and high CSR scores tend to have higher market value relative to assets.

The focus on governance factors is also greater among large firms than small firms, while social factors are more important to smaller firms. Regardless of the company's profitability, the correlation matrix shows that market valuation and profitability are closely related. This suggests that companies with superior profitability may achieve a higher market valuation. However, higher environmental commitment scores may result in modest profitability and market value declines. This may be due to the increased investment required to meet the environmental obligations. ROA and Tobin's Q show negative correlations with Corporate Governance Score and Financial Leverage, indicating that corporations with extensive corporate governance procedures tend to perform worse financially. Effective asset utilization plays a key role in advancing commercial performance by linking turnover to ROA. There is a positive correlation between the Environmental Score and ROA, suggesting that a higher Environmental Score corresponds to higher ROA while in contrast to leverage, assets turnover has a positive influence on ROA.

The Social Commitment Score also has a meaningful positive relationship with ROA, suggesting that socially responsible companies may benefit financially. Efficient asset utilization leads to higher market valuations according to Tobin's Q, which is influenced by environmental score, leverage, assets turnover, and capital investment. The growing importance of social responsibility in shaping market perception has also been associated with higher social commitments scores. The study suggests that firms with higher ESG scores may experience modest decreases in profitability and market value. It appears that investors prefer socially responsible firms with elevated ESG scores. By reducing costs and increasing revenue through eco-friendly supply-chain management, companies can enhance their economic value. It is important for companies to emphasize good corporate social performance, manage key stakeholders, and practice high-level corporate governance to be successful in business.

The implication of this study grounds in its involvement elucidating the affiliation between ESG performance with profitability and valuation of firms within the Oil and Gas industry. The principal objective is to explore the relationship between ESG performance and market valuation while elucidating the mechanisms through which ESG factors influence corporate profitability. As part of the research, a stakeholder theory approach is employed in order to understand how ESG factors influence corporate performance. The study endeavors to identify opportunities to handle risks and improve consolidated performance for firms operating within the Oil and Gas sector by evaluating the importance of ESG performance in the contemporary landscape of the industry. By providing insights into how oil and gas companies prioritize social responsibility initiatives, the findings of

this study will be beneficial to a variety of stakeholders, including management and retail investors. Furthermore, the study aims to facilitate informed decision-making processes and foster sustainable practices within the industry by guiding companies through the evolving landscape of ESG considerations.

This study contributes to the literature by examining the relationship between ESG factors and firms' profitability and valuations. Also, it provides new evidence on the impact of ESG performance on the European and Mideastern oil and gas firms over a period of ten years (2013-2022).

5.2 Recommendations for Future Research

This study examined ESG disclosure performance outcomes using quantitative disclosure indicators, measured by annual reports. Future research should evaluate the financial impact of ESG disclosure by differing disclosure quality, incorporating various sustainability reporting dimensions. We recommend further research into governance structure, environmental policies, and environmental expenditures and revenues. Research from other researchers can be built upon by examining several other markets and examining differences between regions also it is recommended to study other sectors or industries to gain more knowledge about the implications of ESG initiatives. Various financial markets in different countries have different perspectives on ESG, as discussed in the literature review, thus leading to different outcomes.

Furthermore, there can be conditions, laws, cultures, etc. in these markets that can affect the results, resulting in different results. In addition, it should be examined if ESG-score has any influence over turnover on a global scale. Future research should consider time and conduct time-series studies instead

of cross-sectional studies. As longitudinal studies can reveal how ESG-scores and turnover growth change over time, they would be interesting. There is a good chance that more companies will have ESG scores if a similar study is conducted in the future, leading to a larger sample and to reach a more robust result. It would be possible to use other growth metrics rather than asset turnover growth. It would also be possible to compare studies that add other independent variables relating to sustainability. For a greater explanation of the change in the dependent variable, a greater number and/or variety of control variables could be used.

5.3 Limitations of the Study

Every research study has limitations that are beyond the control of the researcher. Such limitations can have an impact on the research analysis, results, and conclusion.

The main limitations of this study are the following:

The data extracted from Bloomberg on ESG scoring from 2013 to 2022 only and the sample size limits to 41 oil and gas companies of which most of the firms are from Europe. This restricts the generalizability of the findings to a broader population of oil and gas companies, especially in the Middle East. Additionally, the study does not account for difference between business within the oil and gas industry. The absence of such a comparison may ignore characteristics in ESG practices exclusive to each business within the oil and gas industry, possibly influencing the study's conclusions. The use of secondary data from the Bloomberg database limits the study's ability to explore the underlying mechanisms driving the association linking ESG scores and financial outcomes. Considering these restrictions, the results of this study provide valuable insight into the relationship between ESG

disclosures and financial results in the oil and gas industry. Future research is required to overcome these constraints in order to capture longer-term trends and their impact on the financial performance of Oil & Gas companies.

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العلاقة بين البيئة والاجتماعية والحوكمة وأداء الشركات: أدلة من شركات النفط والغاز

أطروحة مقدمة كجزء من متطلبات الحصول على درجة الماجستير
في المحاسبة

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مملكة البحرين

المُلخص

الهدف من هذه الدراسة هو دراسة تأثير الإفصاحات البيئية والاجتماعية والحوكمة على ربحية الشركة وتقييمات شركات النفط والغاز في دول الاتحاد الأوروبي ودول الشرق الأوسط. بناءً على نظرية أصحاب المصلحة، تناولت هذه الدراسة

تأثير العوامل البيئية والاجتماعية والحوكمة على الأداء المالي لـ 41 شركة نفط وغاز عاملة في أوروبا والشرق الأوسط خلال الفترة 2013-2022. باستخدام نماذج الانحدار متعدد المتغيرات وتقنيات بيانات اللوحة، توصلت الدراسة الى العديد من النتائج الرئيسية، بما في ذلك أن الشركات التي لديها درجات أعلى في المعايير البيئية والاجتماعية والحوكمة تظهر أداءً ماليًا أفضل وذلك وفقًا لقياس العائد على الأصول ومقياس توبين كيو. ويتم تعزيز الربحية والتقييم السوقي للشركات ذات الممارسات البيئية والاجتماعية والحوكمة السليمة. وقد توصلت الدراسة الى وجود ارتباط قوي بين المكونات المختلفة للجوانب البيئية والاجتماعية والحوكمة والنتائج المالية للشركات. في حين تظهر العوامل البيئية ارتباطًا سلبيًا مع العائد على الأصول وتوبين كيو، فإن درجات الالتزام الاجتماعي تظهر ارتباطًا إيجابيًا مع العائد على الأصول وتقييم الشركات، وتبين ان حوكمة الشركات هي أكبر عامل مساهم في التأثير بشكل إيجابي على العائد على الأصول. بالإضافة إلى ذلك، تؤكد هذه الدراسة على أهمية العوامل السياقية مثل حجم الشركة والرافعة المالية. ووجدت الدراسة أن الشركات ذات الرفع المالي الأعلى لديها عائد على الأصول أقل، لكن الآثار السلبية تتضاءل مع ارتفاع حجم الشركة، مما يؤكد الطبيعة الدقيقة لهذه العلاقات. ومن خلال نظرة شمولية، أظهرت هذه الدراسة أن الاعتبارات البيئية والاجتماعية والحوكمة تؤثر بشكل كبير على الأداء المالي لشركات النفط والغاز. وتضيف هذه الدراسة، التي تقدم رؤى قيمة للممارسين وصانعي السياسات والمستثمرين على حد سواء، إلى مجموعة المؤلفات المتطورة حول البيئية والاجتماعية والحوكمة والأداء المالي. ومن خلال تطوير فهم أكثر شمولاً للعوامل الديناميكية المعنية، فإن ذلك يوفر أساسًا لإنشاء عمليات مسؤولة ومستدامة في صناعة النفط والغاز. تسعى هذه الدراسة إلى تحديد الفرص المتاحة لتحسين أداء الشركات العاملة في قطاع النفط والغاز من خلال تقييم أهمية الممارسات والإفصاحات البيئية والاجتماعية والحوكمة. ومن خلال تقديم رؤى حول كيفية قيام شركات النفط والغاز بإعطاء الأولوية لمبادرات المسؤولية الاجتماعية، ستكون نتائج هذه الدراسة مفيدة لمجموعة متنوعة من أصحاب المصلحة، بما في ذلك الإدارة والمستثمرين الأفراد.

الكلمات المفتاحية: البيئة والاجتماعية والحوكمة، الأداء المالي، تقييم الشركات، أوروبا، الشرق الأوسط