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# Understanding the Influence of ESG Pillars on Financial Returns and Firm Value: The sequel of Theory and Empirical evidence

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**Abstract**
This study investigates the impact of Environmental, Social, and Governance (ESG) pillars on financial returns and firm value among non-financial firms listed on the Pakistan Stock Exchange (PSX), using Stakeholder Theory as a framework. The study focuses on the top 100 non-financial PSX firms between 2014 and 2023, employing a purposive sampling approach. Data is sourced from PSX, NBP, and other reputable platforms. Various statistical models, including Pooled OLS, Random Effects, and Fixed Effects, are used, with the Fixed Effects Model found to be the most reliable for the analysis. The analysis reveals a positive, statistically significant relationship between ESG pillars and both financial returns (ROE) and firm value (Tobin's Q). Firms with stronger ESG practices tend to experience higher ROE and Tobin's Q. Control variables like firm size and sales growth also positively impact financial returns and Firm Value, while financial leverage has no significant effect. The sample is limited to the top 100 non-financial PSX firms, which may limit the generalizability of the findings. This study is one of the first to empirically explore the impact of ESG pillars on financial performance (ROE) and firm value (Tobin's Q) in Pakistan. The findings provide productive insights for investors, corporate managers, policymakers, and other stakeholders in Pakistan, highlighting the importance of ESG practices for improving financial returns and firm value.
Keywords: ESG Pillars, Environment, Social, Governance, ROE, Tobin's Q, Stakeholders Theory, Fixed Effect Model

## Introduction

ESG is a framework used to appraise operations and performance of firms in three (3) important areas that impact sustainability and ethical responsibility. ESG criteria are increasingly used by investors, regulators, and stakeholders to

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assess risks, opportunities, and long-term value creation. ESG has three components or pillars which are Environmental, Social, and Governance (Paolone, Cucari, Wu, & Tiscini, 2022). Environmental Focuses on a company's impact on the environment such as Climate change and carbon emissions, Resource use (water, energy, materials), Pollution and waste management. Social is concerned to how a company manages relationships with employees, customers, and communities. Governance deals with a company's leadership, internal controls, and shareholder rights. ESG has become a critical tool for evaluating not just financial performance but also a company's contribution to sustainable development and long-term value creation. The growing emphasis on Environmental, Social, and Governance (ESG) pillars in corporate decision-making has sparked extensive debate in both academic and business circles. Over the past few decades, businesses have increasingly recognized the importance of addressing these pillars, not just from a regulatory or ethical standpoint, but as strategic elements that can significantly impact their financial performance and overall value. This shift reflects broader societal expectations, where consumers, investors, and other stakeholders demand that companies align their operations with sustainable practices that protect the environment, promote social well-being, and uphold good governance principles (do Amaral, Willerding, & Lapolli, 2024).

Return on Equity (ROE) is a widely used financial performance measure that indicates the profitability of a company relative to its equity. It demonstrates how effectively a firm uses shareholders' equity to generate profits. It reflects the company's efficiency in generating profits from equity capital. A higher ROE typically indicates better management performance (Nurjanah & Prasetyo, 2024). Investors use ROE to evaluate the return on their investment, making it a critical measure for assessing financial performance. Firm Value represents the total value of a company as perceived by investors and stakeholders. It is often assessed using market-based measures like Tobin's Q or Market Capitalization. Firm value reflects how the market perceives the company's ability to generate future cash flows. It is a forward-looking measure influenced by factors like financial performance, market dynamics, and ESG practices (Xiao, Deng, Zhou, & Chen, 2023).

The growing importance of Environmental, Social, and Governance (ESG) factors has motivated numerous scholars to investigate their relationship with firm performance, yielding varied conclusions. For instance, Tohang, Hutagaol-Martowidjojo, and Pirzada (2024) and Velte (2017) found evidence suggesting that ESG positively impacts firm performance. Their studies indicate that firms embracing ESG practices often experience enhanced efficiency, better stakeholder engagement, and improved financial outcomes, which contribute to higher profitability and firm value. Conversely, some researchers, such as Di Tommaso and Thornton (2020) **and** Nirino, Santoro, Miglietta, and Quaglia (2021) reported a negative relationship between ESG and firm performance or value. They argue that the costs associated with implementing ESG practices, such as investments in sustainable initiatives or compliance with regulatory requirements, can outweigh the perceived benefits, especially in the short term. Additionally, studies like those by Shakil, Mahmood, Tasnia, and Munim (2019) and Domanović (2022) concluded that there is no significant relationship between ESG—or its individual components—and firm performance. This

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suggests that certain ESG practices might not directly impact financial metrics or that their influence depends on contextual factors such as the firm's industry or geographic location. A precarious reason for these differing findings is the lack of comparability in disclosing ESG information across sectors, industries, and countries. As noted by Del Giudice and Rigamonti (2020) and Naeem, Ullah, and Jan (2021), variations in the scope and focus of ESG reporting create challenges in standardizing assessments. Differences in regulatory frameworks, cultural priorities, and reporting practices contribute to inconsistencies, making cross-sectorial or cross-country comparisons difficult.

This diversity of findings underscores the need for more standardized ESG reporting frameworks and deeper investigations into how contextual factors shape the ESG-performance relationship. By addressing these challenges, future research can provide clearer insights into the impact of ESG on firm performance, particularly in underexplored contexts such as emerging markets.

In recent years, the relationship between ESG pillars and financial outcomes, including financial returns and firm value, has been a subject of both theoretical exploration and empirical investigation. Theoretical perspectives from stakeholder theory, shareholder value theory, and resource-based view suggest that integrating ESG considerations into corporate strategies can potentially enhance a firm's competitive advantage, improve stakeholder relations, and mitigate risks, all of which are expected to translate into superior financial performance (Agliardi, Alexopoulos, & Karvelas, 2023).

Empirically, the evidence on the impact of ESG pillars on financial returns and firm value is mixed. Some studies highlight a positive correlation between high ESG performance and financial success, citing improved operational efficiency, reduced risks, and enhanced brand loyalty. Others, however, suggest that the financial benefits of ESG are not always immediate or universally applicable, often depending on industry characteristics, the firm’s size, and its geographical context. Despite these varied findings, the overall trend indicates that companies that effectively manage their ESG performance tend to enjoy better long-term financial outcomes, including higher profitability, lower cost of capital, and superior firm valuation (Chen, Song, & Gao, 2023; YOUSAF Khan, Saqib, & Ahmad, 2016).

This paper seeks to examine the complex interplay between ESG pillars and financial performance, focusing on how environmental, social, and governance practices influence a company's ability to generate financial returns and sustain its market value. It aims to provide a comprehensive understanding of the theoretical foundations underpinning ESG integration, review key empirical findings, and highlight the moderating pillars that can shape the relationship between ESG practices and financial outcomes. The objective is to bridge the gap between theory and empirical evidence, offering insights that can help both scholars and practitioners navigate the growing importance of ESG in corporate strategy(Ahmed et al., 2016).

Given the mixed findings in existing literature of different research, this study seeks to investigate the impact of ESG pillars on financial performance in Pakistan, focusing on environmental, social, and governance practices. Pakistan, with its emerging economy and growing emphasis on sustainability, presents a unique context for understanding how ESG considerations influence corporate financial outcomes (Velte, 2017). The country's diverse economic landscape,

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regulatory environment, and market dynamics provide a valuable backdrop for examining the relationship between ESG engagement and financial success.

In spite of the growing importance of Environmental, Social, and Governance (ESG) pillars in influencing firm performance, much of the existing research in this domain relies on outdated data and primarily focuses on developed economies such as the United States, Europe, Germany, France, Belgium, the United Kingdom, Canada, and Australia. These studies, while valuable, often overlook the unique contexts and challenges faced by firms in developing countries. As a result, there is a significant gap in understanding how ESG practices impact firm performance in emerging economies, particularly in countries like Pakistan. While recent research has explored the role of ESG factors, few studies (Jamil & Siddiqui, 2020; Jan & Zahid, 2024; Naeem et al., 2021; Yousaf Khan & Khan, 2020) have specifically examined their influence on financial returns and firm value in the context of emerging Economy. To address this gap, this study focuses on understanding the influence of ESG pillars—Environmental, Social, and Governance—on financial returns and firm value for a sample of firms listed on the PSX over the period 2014 to 2023. This research aims to provide a comprehensive analysis of how ESG Pillars contribute to firm performance in an emerging market context, thereby enriching the literature with both theoretical insights and empirical evidence. Grounded in Stakeholder Theory, this study emphasizes the critical role of managers in addressing the needs and expectations of both internal and external stakeholders (Yousaf Khan, Arshad, Bashir, Nadeem, & Gujjar, 2022). ESG practices are conceptualized as management efforts to meet these stakeholder demands, thereby driving improvements in financial returns and enhancing firm value. By examining the interplay between ESG factors and firm performance in Pakistan, this research aspires to offer valuable contributions to the existing body of literature and provide actionable insights for both academics and practitioners in emerging markets (D Yousaf Khan, W Ahmad, & F Malik, 2021).

The structure of the rest of paper is as: Section 2: This section will review previous research related to the ESG Pillars, Financial Returns and Firm Value, which helps to position the study within the existing body of knowledge. It will also lay the foundation for hypotheses, providing the theoretical and empirical context needed to explain the expected relationships in the research study. Section 3: This section will describe the data used, including sources and Sample selection. It also explains the key variables involved in the analysis and details the methodology employed (statistical models, econometric techniques, etc.) for testing hypotheses. Section 4: This section presents the findings from the analysis, typically involving descriptive statistics, Correlation, regression results and other quantitative outcomes. It is also discussed how these results support hypotheses. Section 5: It summarizes the main findings and their implications. It also offers recommendations for future research, suggesting ways to extend the study based on the results and limitations identified.

**Literature and hypotheses**

Several studies document how Environmental, Social, and Governance (ESG) pillars affect financial return (ROE) firm value (Torbin's Q). To structure the *Relevant Theoretical and Empirical Literature* for this paper on how ESG pillars influence financial returns and firm value, the section should integrate

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both foundational theories, empirical studies and developed hypothesis (Y Khan, Hussain, & Israr, 2021; Mumtaz, Ahmad, & Khan, 2021).

**Theoretical Literature**

There are different theories related to ECG Pillars and Financial Returns and Firm Value are discussed below:

**Agency Theory**

Agency theory suggests that there is often a conflict of interest between managers (agents) and shareholders (principals). Strong governance practices (a core part of ESG) can help mitigate these conflicts by aligning managers' goals with those of shareholders, potentially leading to better financial outcomes and firm value. Firms with strong governance structures are expected to reduce agency costs, increase transparency, and improve decision-making, which can positively affect Financial Returns and Firm Value (Y Khan et al., 2021; Mumtaz et al., 2021; Tang, 2022).

**Stakeholder Theory**

Stakeholder theory posits that firms should prioritize the interests of all stakeholders, not just shareholders. By focusing on environmental sustainability, social responsibility, and governance issues, firms can create long-term value for a broader set of stakeholders, including employees, customers, suppliers, and the community. By enhancing relationships with key stakeholders (e.g., through environmental sustainability or fair labor practices), firms can reduce risks, enhance their reputation, and drive long-term financial returns and firm Value (Yousaf Khan & Arshad, 2023; Kumar, 2023).

**Resource-Based View**

The RBV suggests that firms gain competitive advantages from valuable, rare, inimitable, and non-substitutable resources. ESG pillars can serve as unique resources, such as a company's brand reputation, employee satisfaction, or efficient use of resources (e.g., energy conservation, waste reduction). Investing in ESG practices can enhance a firm's long-term competitive edge by building intangible assets like corporate reputation, innovation, and customer loyalty, which can positively affect firm value and financial returns (Madhani, 2010; Mumtaz et al., 2021; D Yousaf Khan et al., 2021).

**Legitimacy Theory**

According to legitimacy theory, firms engage in socially responsible practices to ensure they are seen as legitimate by stakeholders, particularly in industries where environmental or social practices are heavily scrutinized. Firms that adopt and report ESG practices may reduce reputational risks and gain trust from investors, customers, and regulators, which can lead to improved financial performance and firm value (Al Amosh, Khatib, & Ananzeh, 2023).

**Signaling Theory**

Firms may use ESG practices as signals to the market about their quality, ethical standards, and long-term focus. The signals help investors make decisions based on a firm’s governance quality, risk management, and potential for future

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financial returns. A firm's commitment to high ESG standards may signal its operational excellence, future growth potential, and reduced risk, thereby enhancing its market value (Carnini Pulino, Ciaburri, Magnanelli, & Nasta, 2022; Yousaf Khan, Ahmad, & Malik, 2022; Mumtaz et al., 2021).

**Social Contract Theory**

Donaldson and Dunfee (2002) suggest that businesses operate within implicit social contracts. By addressing societal needs, firms maintain their license to operate, which can result in improved financial outcomes (Yousaf Khan, Ahmad, Awan, & e Ali, 2022).

**Empirical Literature**

**Environmental Pillar and Financial Returns**

Environmental pillar, encompassing initiatives like pollution control, resource efficiency, and renewable energy adoption, are increasingly recognized as critical determinants of corporate financial performance. This section reviews theoretical and empirical studies that explore the relationship between environmental pillar and financial returns, particularly focusing on Return on Equity (ROE) as a measure of profitability. Brahmana and Kontesa (2021)found that firms investing in pollution prevention technologies experienced significant improvements in financial returns, including ROE, within two years. These gains were attributed to cost savings and enhanced operational efficiency. Dorigoni and Anzalone (2024) analyzed firms adopting renewable energy and observed higher ROE due to reduced energy costs and access to government incentives. Matsumura, Prakash, and Vera-Muñoz (2014) conducted research and revealed that firms in highly regulated industries often face to an insignificant or even negative relationship with financial returns. Ruggiero and Lehkonen (2017)highlighted that companies integrating renewable energy reported improved financial performance, primarily through operational cost reductions (Ayaz, Khan, & Shad, 2022; Batool, Khan, Arshad, & Bashir, 2024).

Ganda and Milondzo (2018) demonstrated that firms managing carbon emissions effectively achieved superior financial performance, including higher ROE, by minimizing regulatory risks and attracting environmentally conscious investors. Włodarczyk, Szczepańska-Woszczyna, and Urbański (2024) identified a positive relationship between carbon efficiency and ROE in European firms, with cost savings and improved market reputation as contributing pillars.

Srouji, Hamdallah, Al-Hamadeen, Al-Okaily, and Elamer (2023) noted that firms with detailed disclosures of environmental practices achieved higher ROE, as transparency attracted investors and enhanced stakeholder confidence (Yousaf Khan, 2022). Chen et al. (2023) also found a significant link between robust environmental disclosures and improved financial performance, driven by reduced capital costs and enhanced trust. They also highlighted that environmental sustainability often results in higher financial returns due to operational efficiencies and enhanced risk management. The literature indicates a predominantly positive relationship between environmental pillar and financial returns, particularly ROE. Firms that prioritize environmental initiatives benefit from cost savings, operational efficiencies, and enhanced reputational capital, which collectively improve profitability. However, the extent of this impact varies across industries and regions, emphasizing the need for context-specific analysis,

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especially in emerging markets like Pakistan(Yousaf Khan, Ahmad, & Malik, 2022). In light of previous studies the following hypotheses is considered:
**$H_1$:** The Environmental Pillar positively and significantly impacts financial returns

**Social Pillar and Financial Return**

In emerging marketplaces, the interplay between social pillar and ROE is less explored but growing in relevance. Yousaf Khan, Rehman, Shah, and Khan (2018) found that firms in developing countries adopting socially responsible practices experienced improved financial performance, driven by enhanced stakeholder trust. Studies in developed markets, such as those by Margolis and Walsh (2003), have consistently reported a positive relationship between social pillar and financial returns due to higher stakeholder awareness and regulatory support. Clark, Feiner, and Viehs (2015): The study highlighted that firms addressing social concerns often outperform their peers financially, with ROE being a key indicator of success. Yousaf Khan et al. (2018) noted that in manufacturing, socially responsible labor practices and community involvement contributed to improved financial metrics, including ROE. According to Svoboda (2023), the meta-analysis of ESG pillars found that social considerations positively influence financial returns in most cases. Firms focusing on employee welfare, customer satisfaction, and community engagement reported higher ROE. The literature reveals a strong and positive relationship between social pillars and financial returns. Initiatives focusing on CSR, employee welfare, community engagement, and customer satisfaction contribute to improved ROE by enhancing stakeholder relationships. Hence in light of previous studies, the following hypothesis is considered:
**$H_2$:** The Social Pillar positively and significantly impacts financial returns.

**Governance Pillar and Financial Return**

Governance practices in high-growth sectors, such as technology, were found to positively impact ROE, particularly when executive compensation aligned with long-term company performance, ensuring growth and financial stability (D Yousaf Khan et al., 2021). This global review found that firms with better governance, including stronger shareholder rights and board structures, tended to have higher ROE, particularly in countries with developed corporate governance frameworks. The focus on adhering to governance norms rather than capitalizing on business opportunities may limit profitability, leading to a negative impact on ROE (Ahmad, Khan, Hussain, Khan, & Khan)). Hanif, Khan, Jamal, Gul, and Zeeshan (2023) highlighted that firms with stronger governance structures (such as shareholder rights, board independence, and executive pay linked to performance) consistently outperforms their peers in developed markets, with higher ROE as a key indicator of improved financial performance. The literature indicates a robust positive relationship between governance pillars and financial returns, particularly ROE. In light of previous studies the following hypotheses is considered:
**$H_3$:** The Governance Pillar positively and significantly impacts financial returns.

**Environmental Pillar and Firm Value (Tobin's Q)**

Cheng and Feng (2023) conducted research and found a significant positive

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relationship between environmental performance and Tobin's Q, especially for firms in industries where environmental regulations are strict. These firms tend to be valued higher by the market due to their proactive approach to sustainability. Bardosh (2023) found that while environmental sustainability efforts can increase firm value in certain contexts, particularly in highly competitive industries, the relationship is inconsistent across industries. In some cases, firms may experience higher market valuation, while in others, the relationship with Tobin's Q remains insignificant or even negative. A comprehensive meta-analysis concluded that while environmental practices tend to have a small positive effect on firm value (Tobin's Q), the relationship is not universally strong (Bardosh, 2023). In some cases, the impact of environmental pillar on firm value is either neutral or negative, particularly in industries where environmental investments are costly or where market perceptions of these investments are mixed. Benjamin, Biswas, Wellalage, and Man (2023) found that environmental pillar had a weak or insignificant relationship with Tobin's Q, particularly in firms where environmental initiatives were not seen as directly contributing to competitive advantage or long-term profitability. The impact of environmental pillar on firm value, measured by Tobin's Q, is complex and context-dependent. In some industries, environmental sustainability practices lead to a positive market valuation, as investors perceive these firms as more future-proof and less risky. In other cases, especially in sectors with high compliance costs or where market sentiment is skeptical, environmental pillar may have a neutral or negative relationship with Tobin's Q. In light of previous studies the following hypotheses is considered:

**$H_4$:** The Environmental Pillar positively and significantly impacts firm value.

**Social Pillar and Firm Value (Tobin's Q)**

The relationship between social pillar and firm value, as measured by Tobin's Q, is generally positive, particularly in industries where consumer perception, employee relations, and stakeholder engagement are key drivers of business success. Firms that invest in socially responsible practices can improve their reputation, reduce risks, and enhance long-term value, leading to higher Tobin's Q. However, the impact is not always consistent across industries, and in some cases, social initiatives may not result in immediate financial returns, especially in capital-intensive or low-margin sectors. Chapagain, Baniya, and Biswakarma (2024) carried out research study and found that for some firms, particularly those in industries where competitive advantage is closely linked to cost efficiency (e.g., manufacturing), social initiatives may increase costs without providing clear financial returns. This could lead to a decrease in Tobin's Q as investors may perceive the firm as over-investing in social programs without enough return. CSR initiatives had a positive impact on stakeholder perceptions, the relationship with Tobin's Q was often weak, particularly in firms where CSR efforts were viewed as "window dressing" or not deeply embedded in the firm's strategy (Ko, 2022). Lopez-de-Silanes, McCahery, and Pudschedl (2020) investigated the relationship between ESG reporting and quality and find that ESG scores have no impact on firm financial performance. In light of previous studies the following hypotheses is considered:

**$H_5$:** The Social Pillar positively and significantly impacts firm value.

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**Governance Pillar and Firm Value (Tobin's Q)**

A comprehensive study across multiple countries showed that strong governance practices, including shareholder rights and board independence, were associated with higher Tobin's Q (Lopez-de-Silanes et al., 2020). However, in countries with weaker institutions or less-developed capital markets, the effects of governance on firm value were less pronounced, indicating the importance of contextual pillar in governance research. Claessens and Yurtoglu (2013) examined governance practices across different countries and found that firms with strong governance institutions, including independent boards, transparency, and active shareholder rights, had higher Tobin's Q, highlighting the global relevance of governance in firm valuation. Rahman, Zhu, Zhang, and Hossain (2024) conducted research and showed that corporate governance quality has a significant positive effect on Tobin's Q, especially in firms that are more transparent in their reporting and provide strong shareholder protections. The authors argued that better governance structures increase investor confidence, thereby improving the firm's market value.

The relationship between governance pillar and firm value (Tobin's Q) is generally positive, with strong governance structures helping firms mitigate risks, improve managerial accountability, and enhance long-term shareholder value. Effective governance mechanisms, such as independent boards, shareholder protections, and transparency, are associated with higher market valuations as investors perceive these firms as lower-risk and better-managed. However, in some contexts, the effects may be neutral or even negative, particularly if governance practices lead to high costs or disrupt decision-making processes. The impact of governance on Tobin's Q can also vary across industries, with sectors like banking and technology benefiting more from strong governance due to regulatory and reputation concerns. In light of previous studies the following hypotheses is considered:

**$H_6$:** The Governance Pillar positively and significantly impacts firm value.

Each hypothesis examines the individual contribution of the ESG pillars to financial returns (ROE) and to the broader valuation of firms within the PSX over the specified period. Testing these hypotheses will provide insights into which specific aspects of ESG have the most influence on financial returns and firm value in the context of non-financial firms of Pakistan.

**Conceptual Framework**

This **conceptual framework** provides a structured approach to understanding how ESG pillars—environmental, social, and governance considerations—impact a firm's financial performance (ROE) and market valuation (Tobin's Q). The framework highlights the complex interrelationships between these pillars, emphasizing both direct and indirect effects.

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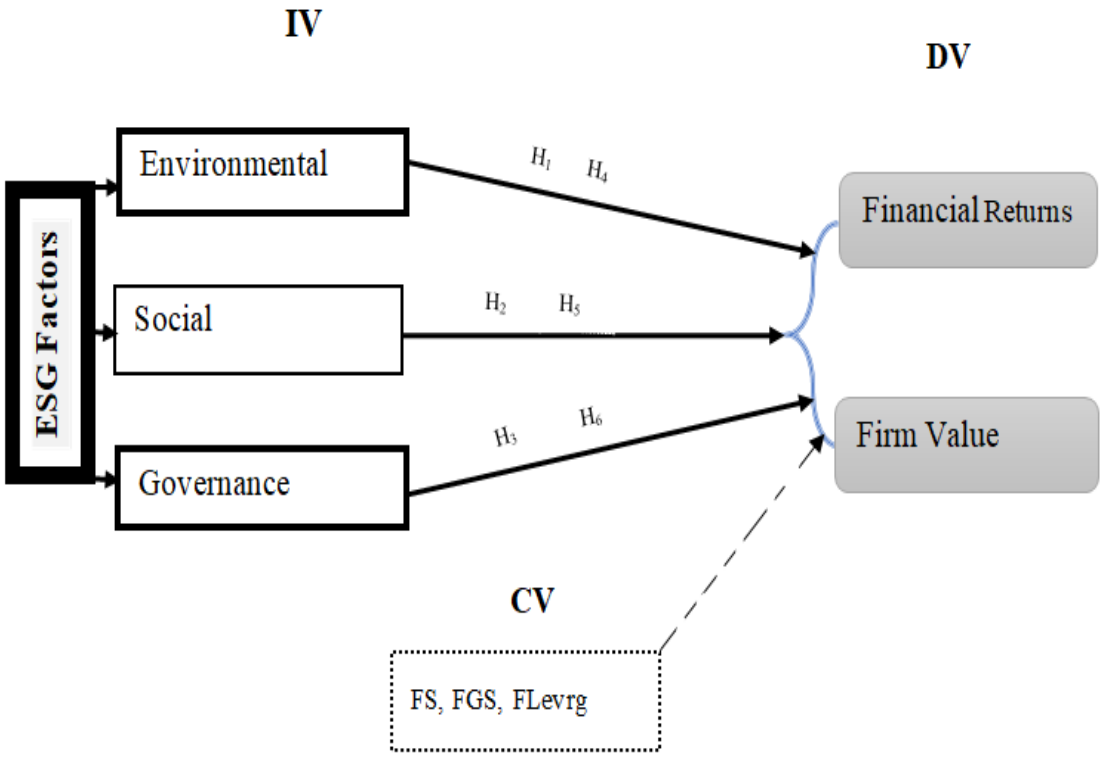


Conceptual Framework 1

## Methodology

The Methodology section of this research clearly explains the research approach, data sources, variables, and Research Model used. Below is the detailed outline tailored to the research context?

### Research Design

**A quantitative research design** is appropriate, using secondary data analysis to investigate the relationship between ESG pillars and financial performance indicators such as return on equity (ROE) and firm value. The study focuses on the top 100 non-financial firms listed on the PSX from 2014 to 2023. A purposive sampling technique is adopted with the intention to target all those firm which actively engage in ESG practices and have publicly available data. Data for the analysis is sourced from reliable platforms, including PSX, the National Bank of Pakistan (NBP), and other credible websites.

### Operational Definition of Variables.

### Variables' Explanation

### Dependent Variables

**Financial Returns** is first dependent variables that is Measured by **ROE,** which is commonly used to assess a firm's profitability relative to shareholders' equity. **Firm Value** is the second dependent variable of this study and is measured by **Tobin's Q** (Giannopoulos, Kihle Fagernes, Elmarzouky, & Afzal Hossain, 2022)

### Independent Variables

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**ESG Pillars** including Environmental (Env), Social (Soc) and Governance (Gov) are independent variables of the study. Environmental pillar measure the impact of Firm on the natural environment and its efforts to mitigate environmental risks. The social pillar evaluates the relationships of Firm with its employees, customers, suppliers, and the communities. Governance Pillar evaluates the internal controls, leadership structure, and accountability mechanisms of firm (Y Khan et al., 2021).

## Control Variables

Control variables are pillars included in a model to account for their potential influence on the dependent variable. Firm size (Fsize) refers to the scale of a company's operations, often measured by total assets. Financial leverage (FLevrg) reflects the degree to which a firm relies on debt financing relative to its equity (Giannopoulos et al., 2022; Yousaf Khan & Khan, 2020). Growth in sales (FSale) indicates the percentage increase in a firm's revenue over a given period. The details and source of all variables given in below table.

Table 1: All Variables measurement and Source

| Variable | Type | Description | Source |
|---|---|---|---|
| ROE (Return on Equity) | DV | Net income/total equity. | Atan et al. (2018) |
| TQ (Tobin's Q) | DV | Market Value of Equity + Market Value of Liabilities/Book Value Assets | Xie et al. (2019) |
| Env Pillar | IV | Resource, emissions & innovation are used (11%), (12%) & (11%) respectively | Xie et al. (2019) |
| Soc Pillar | IV | Workforce, human rights, community & product responsibility are respectively (16%), (4.5%), (8%) & (7%) | Xie et al. (2019) |
| Gov Pillar | IV | Management, shareholders & CSR strategy are respectively (19%), (7%) & (8%) | Xie et al. (2019) |
| Fsize | CV | Logarithm of Total Assets | Atan et al. (2018) |
| Fsale | CV | Total sales of firms by percentage increase. | Xie et al. (2019) |
| Flevrg | CV | Total Debt/Total Assets | Atan et al. (2018) |

## Research Equations/Models

This study uses two models to test the hypotheses and pooled OLS, random effects, and fixed effects models are used to estimate the parameters of the models. The findings of the Hausman test are used to decide the efficiency of the methods mentioned above (Yousaf Khan, Zafar, & Ayaz, 2022).

## Six Models of ROE and Tobin's $Q_{it}$:

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**Model-I:** $RO_{Eit} = \beta_0+\beta_1(Env)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

**Model-2:** $ROE_{it} = \beta_0+ \beta_1(Soc)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

**Model-3:** $ROE_{it} = \beta_0+ \beta_1(Gov)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

**Model-4:** Tobin's $Q_{it} = \beta_0+\beta_1(Env)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

**Model-5:** Tobin's $Q_{it} = \beta_0+ \beta_1(Soc)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

**Model-6:** Tobin's $Q_{it} = \beta_0+ \beta_1(Gov)_{it}+ \beta_2(Fsize)_{it}+\beta_3(FLevrg)_{it} + \beta_4(FSale)_{it} + \varepsilon_{it}$

Where:
$ROE_{it}$ = Return on Equity
Tobin's $Q_{it}$ = MV of Equity + MV of Liabilities/BV of Assets
$Env_{it}$ = Environmental score
$Soc_{it}$ = Social score
$Gov_{it}$ = Governance score
$\beta_0$ = Constant of Regression equation
Fsize = Firm Size
FLevrg = Firm Leverage
FSale = Firm Sale Growth
$\varepsilon it$ = Error term

**Model Selection or Selection**

Generally, three models are used for the analysis of the Panel Data of the Study. These models are hereunder: a. Pooled Ordinary Least Squares (OLS) b. Random Effects Model (REM) c. Fixed Effects Model (FEM) For the purpose of selecting the appropriate Model, the following relevant tests (stated in table below) should be conducted before using the model of analysis of Data of the study.

Table 2: Comparison of Models

| S.no | **Comparison of Models** | **Name of Test** | **Preferred Model if Sig** |
|---|---|---|---|
| 1 | Pooled OLS vs FEM | F-Test for Fixed Effects | FEM |
| 2 | Pooled OLS vs REM | Breusch-Pagan LM Test | REM |
| 3 | FEM vs REM | Hausman Test | FEM |

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**Diagnostic Tests for Robustness**

Even after selecting the most appropriate model (Pooled OLS, REM, or FEM), it is crucial to validate its assumptions and robustness to ensure that the results are reliable and the model is properly specified. By performing these diagnostic tests and ensuring the robustness of your model, you can be more confident in the validity of your results and the appropriateness of your chosen model (Pooled OLS, REM, or FEM). The key diagnostics tests are stated below in table:

Table 3: Diagnostic Tests for Robustness

| Test | Purpose | Remedy if Violated |
|---|---|---|
| Heteroscedasticity | Check for non-constant variance in errors | Use robust standard errors |
| Autocorrelation | Check for serial correlation in residuals | Use robust standard errors or GLS |
| Cross-Sectional Dependence | Check for correlation between entities' errors | Use FGLS or clustered standard errors |
| Multicollenearity | Check for correlations among independent variables | Drop or combine variables, use PCA |
| Normality of Residuals | Check if residuals are normally distributed | Use robust standard errors or GMM |
| Model Specification | Check for omitted variables or incorrect functional form | Add missing variables, change functional form |
| Endogeneity | Check if independent variables are correlated with error term | Use IV or 2SLS |
| R-squared and Adjusted R-squared | Measure model fit | Consider alternative models if too low |

## Results and Discussions

The relevant Data of the top 100 non-financial firms for the analysis is obtained from reliable platforms, such as PSX, the National Bank of Pakistan (NBP), and other reliable websites for the period 2014 to 2023 targeting companies that actively engage in ESG practices and have publicly available data. The detailed results of descriptive statistics, the correlation matrix, model specification tests, and the regression analyses are presented in this section.

**Analysis along with discussion**

**Descriptive analysis**

Descriptive analysis summarizes the data's key characteristics, highlighting patterns and relationships. It provides the mean, standard deviation, minimum, and maximum values for the study's dependent and independent variables.

The descriptive statistics for the dataset indicate that the mean Return on Equity (ROE) is 4.231, while the mean value of Tobin's Q is 3.565. A Tobin's Q is > 1 suggests that the market values the firm's stock higher than its BV, entailing that most firms in the dataset are overrated or overstated.

Additionally, the greater the ROA, the more effectively a firm is generating

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profits from its assets. Similarly, the higher mean ROE indicates that firms are efficient in generating profits relative to shareholders' equity. Therefore, the results suggest that the firms in this study are not only highly valued by the market but are also efficient in their profit-generation capacity.

Table 4: Descriptive Analysis

| Variables | Min | Max | Mean | SD |
|---|---|---|---|---|
| **Dependent Variables** | | | | |
| ROE | 1.345 | 75.786 | 4.231 | 2.675 |
| TQ | 1.461 | 70.545 | 3.565 | 1.527 |
| **Independent Variables** | | | | |
| Env | 0.000 | 94.53 | 20.453 | 15.565 |
| Soc | 0.000 | 91.230 | 33.360 | 20.134 |
| Gov | 0.000 | 95.221 | 34.322 | 28.570 |
| **Control Variables** | | | | |
| Fsize | 10.430 | 90.343 | 30.340 | 25.140 |
| FSale | 14.150 | 30.488 | 18.934 | 14.315 |
| FLevrg | 13.290 | 87.242 | 20.343 | 12.419 |

The descriptive statistics in Table 4 reveal that the mean Environmental (E) score is 20.453, the Social (S) score is 33.360, and the Governance (G) score is 34.322. These results indicate that, on average, firms score higher in Governance and Social dimensions compared to Environmental pillar, reflecting a relatively stronger focus on corporate governance practices and social initiatives. Among the control variables, the mean Firm Size is 30.340, Growth in Sales is 18.934, and Leverage is 20.343. The leverage ratio appears reasonable for the majority of firms in the dataset, although a few firms exhibit significantly higher debt levels relative to their assets.

Furthermore, the standard deviation for all variables lies within the expected range, indicating that the data is consistent and the variability is within acceptable limits for robust analysis.

## Correlation Matrix

Correlation analysis examines the relationship between ESG pillars (Environmental, Social, and Governance) and financial returns and firm value for non-financial firms listed on the PSX from 2014 to 2023.

### Relationship between ESG Pillars and Financial Returns (ROE)

Correlation analysis measures the strength and direction of relationships between variables. Table 5 presents the Pearson correlation matrix, showing no significant correlation between ESG scores and Tobin's Q or ROE (Yousaf Khan, 2022).. However, ESG components (Environmental, Social, and Governance) are highly interrelated, reflecting their interdependence within the ESG framework.

Table 4: Pearson correlation matrix

| Variables | ROE | TQ | Env | Soc | Gov | Fsize | FLevrg | FSale |
|---|---|---|---|---|---|---|---|---|
| ROE | 1 | | | | | | | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TQ | 0.311 | 1 | | | | | | |
| Env | 0.256 | 0.164 | 1 | | | | | |
| Soc | 0.364 | 0.489 | 0.542 | 1 | | | | |
| Gov | 0.524 | 0.545 | 0.189 | 0.345 | 1 | | | |
| Fsize | -0.158 | -0.188 | -0.564 | 0.156 | 0.283 | 1 | | |
| FLevrg | -0.345 | 0.535 | 0.676 | -0.653 | -0.243 | -0.324 | 1 | |
| FSale | 0.188 | 0.176 | 0.136 | -0.224 | 0.181 | 0.114 | 0.283 | 1 |

Sig. Levels: *** is significant at 0.01; **is significant at 0.05 & * is significant at 0.10

It is generally expected that IVs are positively associated with DVs. Multicollenearity becomes a concern when the correlation coefficient between two variables exceeds 0.90, as suggested by Daoud (2017) and Batool et al. (2024). To avoid issues of multicollenearity in regression analysis, such highly correlated variables are excluded. In this study, all variables exhibit correlation values below 0.90, confirming the absence of multicollenearity. This ensures the reliability of subsequent regression analyses, as the results are not distorted by excessively high correlations among independent variables.

**Diagnostics-Tests**

The sample data used for this research study has to undergo a number of diagnostic tests in order for the analysis to be viable. In truce with past studies, the sample data was put through a diagnostic process provided in Table 1 hereunder. (Alkordi, Munther, & Dabaghia, 2017; Yousaf Khan, Ahmad, & Malik, 2022). In research, **diagnostic tests** are statistical procedures used to evaluate the validity, reliability, and appropriateness of the chosen model and its assumptions. They help identify potential issues such as heteroscedasticity, multicollenearity, autocorrelation, and model misspecification. The respective diagnostic tests are given below in Table:

Table 5: Diagnostic-Tests

| Particular | Test | X2 | Prob. Chi Sq. | VIF | 1/VIF | F | Prob |
|---|---|---|---|---|---|---|---|
| Normality | Jarque-Bera test | 0.503 | 0.301 | - | - | - | - |
| Serial-Correlation | Breusch-Godfrey LM test | 0.073 | 0.132 | - | - | - | - |
| Heteroscedasticity | Breusch-Pagan-Godfrey test | 0.703 | 0.523 | - | - | - | - |
| Multicollenearity | VIF (IFRS) | - | - | 1.01 | 0.988711 | - | - |
| | VIF (CGI) | - | - | 1.09 | 0.918231 | - | - |
| | VIF (CGI*IFRS) | - | - | 1.66 | 0.907646 | - | - |
| | VIF (Firms) | - | - | 1.05 | 0.956774 | - | - |
| | VIF (Levrg \|) | - | - | 1.04 | 0.965708 | - | - |
| | VIF (GnS) | - | - | 1.02 | 0.97666 | - | - |
| Endogeneity | RESET test | | - | - | - | 2.25 | 0.0310 |

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**Model Specification or Selection Test**
Selecting the appropriate panel data model—Pooled OLS, Random Effects (REM), or Fixed Effects (FEM)—is crucial for accurate analysis. This study employed the Likelihood test (F-test) to compare Pooled OLS and FEM, the Lagrange Multiplier (LM) test for Pooled OLS and REM, and the Hausman test for FEM and REM to determine the most suitable model. These tests, summarized in the table below, guide the choice of the optimal model for the study's data analysis.

**Pooled OLS vs Fixed Effect Model:**
Hypothesis:

$H_0$: Pool OLS Model
$H_1$: Fixed Effect Model
Basis decision:

The null hypothesis (H0H_0H0) is accepted if the Chi-square probability exceeds 0.05 and rejected if it is less than 0.05. The likelihood test results comparing Pooled OLS and FEM are presented as follows:

Table 6: Results of Likelihood-Test

| Effect Test | Statistics | df | Prob |
|---|---|---|---|
| Cross-section F | 12.257254 | (15.05) | .0000 |
| Chi-square cross-section | 130.878554 | 15 | 0.000 |

The Chow test results in Table 5 show a probability of 0.0000, indicating H0H_0H0 is rejected. Thus, the Fixed Effects Model is identified as the best panel data estimation method.

**FE VS RE Model:**
**Hausman-Test**
The Hausman specification test is then used to determine which of the random effect and fixed effect models is the fit. Given that the p-value is significant, the Hausman test result demonstrates that the fixed effect model is preferable to the Random effect model. Relevant test results in the development of two null and alternate hypotheses, which are as follows (Ko, 2022; Sun, Guo, & Wu, 2022; Dr Yousaf Khan, Wisal Ahmad, & Faizan Malik, 2021):
**$H_0$**: REM.
**$H_1$**: FEM

**Basis decision**
$H_0$ is acceptable if the possibility chi-square is greater than 0.05. $H_0$ is disproved if the probability chi-square is less than 0.05.
A fixed effects regression model and a random effects model were estimated in STATA using the xtreg command with relevant options (fe and re). The results were stored using the commands estimates store fixed and estimates store random. The Durbin-Wu-Hausman (DWH) test was then performed with the command hausman fixed random to compare the two models, yielding the following results.

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Table 7: Hausman test

| | Coeff. |
|---|---|
| Chi-square test value | 20.321 |
| P-value | 0.000 |

The results in Table 5 show a statistically significant Chi-square probability ($p < 0.05$), indicating that the Fixed Effects Model is superior for this study's panel data analysis. With the p-value below 0.05, H0H_0H0 is rejected, and H1H_1H1 is accepted. The Hausman test results confirm the rejection of the Random Effects Model, validating the choice of the Fixed Effects Model (Yousaf Khan, Ahmad, & Malik, 2022).

Here's a summary of comparisons after carrying out different tests to determine the most appropriate model for panel data analysis. Thus the appropriate model is Fixed effect model in light of tests for Data analysis. Summary of the tests are given below:

Table 8: Summary of Tests

| **Comparison of Models** | **Test** | **Chi-Square Value** | **P-Value** | **Result** |
|---|---|---|---|---|
| Pooled OLS vs FEM | Likelihood-Test | 15 | 0000 | FEM |
| FEM vs REM | Hausman Test | 20 | 0000 | FEM |

**Regression Analysis**

his study explores the impact of ESG pillars on financial returns and firm value among non-financial firms listed on the PSX, guided by Stakeholder Theory. Using panel data analysis, the Fixed Effects Model was selected based on Hausman test results. Tables 11 and 12 present the regression analysis findings, highlighting the effects of independent variables on dependent variables and evaluating the study's hypotheses.

**ESG Pillars and Financial Returns (ROE)**

The regression analysis shows that ESG pillars significantly positively impact the financial returns (ROE) of PSX-listed firms from 2014 to 2023. Model-1 results are statistically significant at the 1% level ($F = 15.481$), explaining 50% of ROE variation. The environmental pillar has a significant positive effect on ROE, with a coefficient of 31.83 and a p-value of 0.003. This indicates that a one-unit increase in the environmental score leads to a 31.83-unit increase in ROE, supporting Hypothesis 1 that better environmental practices enhance financial performance.

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Table 9: Fixed Effects Model for ROE

| Model | 1 | | | 2 | | | 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| **ROE** | **Coef** | **Std. Err.** | **P-value** | **Coef** | **Std. Err.** | **P-value** | **Coef** | **Std. Err.** | **P-value** |
| Env | 31.83 | 37.73 | 0.003 | | | | | | |
| Soc | | | | 35.31 | 57.34 | 0.003 | | | |
| Gov | 35.45 | 33.52 | 0.005 | 35.45 | 32.52 | 0.005 | 32.45 | 30.52 | 0.000 |
| Fsize | 0.035 | 13.21 | 0.02 | 0.037 | 32.39 | 0.02 | 0.015 | 31.12 | 0.014 |
| FLevrg | -31.39 | 30.36 | 0.04 | -23.44 | 41.36 | 0 | -15.23 | 23.36 | 0.341 |
| FSale | 21.43 | 13.47 | 0.051 | 10.3 | 13.47 | 0.031 | 20.33 | 13.47 | 0.034 |
| Mean | | | 0.350 | | | 0.350 | | | 0.350 |
| R-Square | | | 0.505 | | | 0.491 | | | 0.502 |
| Adj. R-Square | | | 0.351 | | | 0.331 | | | 0.301 |
| F-test | | | 15.481 | | | 13.343 | | | 10.324 |
| Prob (F-Statistic) | | | .000 | | | .000 | | | .000 |

The analysis confirms the statistical significance and robustness of the regression models, with F-test statistics of 15.481, 13.343, and 10.324 for Models 1, 2, and 3, respectively, and p-values below 0.001. The models explain 49% to 50% of the variance in ROE, reflecting moderate explanatory power and sample stability.

Model 2 highlights the positive and significant impact of social disclosure on ROE, with a coefficient of 35.31 ($p = 0.003$), emphasizing the role of social responsibility in enhancing financial performance.

Model 3 identifies governance as the strongest ESG factor influencing ROE, with a coefficient of 32.45 ($p = 0.000$), underscoring the importance of governance practices.

Control variables show that firm size and sales positively impact ROE, while financial leverage have no or insignificant influences it. Adjusted R-squared values remain consistent at 0.350 across all models, demonstrating stability and providing valuable insights into how ESG factors and firm-specific characteristics drive financial performance on the PSX.

**ESG Pillars on Firm Value (Tobin's Q)**

Table 12 presents the results of the fixed effects regression analysis examining the relationship between ESG Pillars (independent variables) and Tobin's Q (dependent variable), along with control variables, for non-financial firms listed on the Pakistan Stock Exchange over the period from 2014 to 2023.

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Table 10: Fixed Effects Model for Tobin's Q:

| Model | 1 | | | 2 | | | 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| **TQ** | **Coef** | **Std. Err.** | **P-value** | **Coef** | **Std. Err.** | **P-value** | **Coef** | **Std. Err.** | **P-value** |
| Env | 21.43 | 33.51 | 0.000 | | | | | | |
| Soc | | | | 33.35 | 43.34 | 0.002 | | | |
| Gov | 36.51 | 31.24 | 0.001 | 29.57 | 30.54 | 0.003 | 25.45 | 30.27 | 0.004 |
| Fsize | 0.045 | 12.51 | 0.023 | 0.032 | 23.41 | 0.032 | 0.012 | 21.32 | 0.013 |
| FLevrg | -23.39 | 20.36 | 0.25 | 21.24 | 31.36 | | -14.23 | 22.36 | 0.324 |
| FSale | 31.43 | 13.47 | 0.031 | 12.3 | 14.47 | 0.045 | 40.33 | 13.47 | 0.032 |
| R-Square | | | 0.402 | | | 0.395 | | | 0.312 |
| Adj. R-Square | | | 0.329 | | | 0.431 | | | 0.201 |
| F-Statistics | | | 25.430 | | | 20.343 | | | 16.341 |
| Prob (F-Statistic) | | | .000 | | | .000 | | | .000 |

Table 12 presents the findings for Hypotheses 3, 4, and 6 of this study, which explore the effects of the ESG pillars (Environmental, Social, and Governance) on Firm Value, as measured by Tobin's Q, for the sampled non-financial firms listed on the PSX.

The findings in Table 12 provide valuable insights into the relationship between ESG factors and firm value, measured by Tobin's Q, for non-financial firms listed on the Pakistan Stock Exchange from 2014 to 2023. The R-squared value of 0.402 suggests that the independent variables in the model explain 40.2% of the variation in firm value, indicating moderate explanatory power. The Adjusted R-squared value of 0.329, which accounts for the number of predictors, reveals that 32.9% of the variation in firm value is explained by the ESG variables and control factors, reinforcing the robustness of the findings.

The statistical significance of the F-value ($p < 0.05$) confirms the model's reliability. The analysis shows that the ESG pillars—Environmental, Social, and Governance—are significantly and positively related to Tobin's Q, suggesting that firms with strong ESG practices are valued higher in the market. This indicates that integrating ESG principles not only supports sustainable practices but also enhances firm value, as investors perceive such firms as better managed, less risky, and more forward-looking.

Furthermore, the analysis reveals that firm size (FSize) and sales growth (FSale) positively influence financial returns (ROE). Larger firms and those with higher sales growth are more resourceful and attract more investor attention. In contrast, financial leverage has an insignificant effect on ROE, which may be due to effective debt management or other moderating factors. The findings support Hypotheses H4, H5, and H6, which posit that ESG factors positively influence Tobin's Q. These results align with previous studies by Aydoğmuş, Gülay, and Ergun (2022) and Aouadi and Marsat (2018) highlighting the value-enhancing role of ESG factors.

## Conclusions and Recommendations

### Conclusions

The mandatory adoption of International Financial Reporting Standards (IFRS) has a significant influence on accounting-based measures of performance in

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firms listed on the Pakistan Stock Exchange (PSX). The adoption of IFRS enhances the comparability, transparency, and reliability of financial statements, leading to more accurate performance measurement. This, in turn, may improve the credibility of financial reporting, which is essential for stakeholders such as investors, creditors, and regulators. The analysis suggests that IFRS adoption facilitates better financial decision-making and potentially improves firm performance by ensuring that accounting practices align with global standards.

Moreover, the complementary role of the Corporate Governance (CG) Index plays a pivotal function in enhancing the effectiveness of IFRS adoption. Firms with stronger corporate governance practices tend to better implement IFRS, resulting in more accurate and reliable financial disclosures. The CG Index can serve as a mechanism that supports the smooth integration of IFRS by promoting greater accountability and oversight in financial reporting. Consequently, firms with robust corporate governance structures are likely to experience enhanced performance as they comply more effectively with IFRS standards.

**Recommendations**

5.2.1 Strengthen Corporate Governance Practices: Firms should prioritize enhancing their corporate governance structures to ensure that they can effectively implement IFRS standards. This includes improving board oversight, internal controls, and the transparency of financial reporting.

5.2.2 Continuous Training and Development: To maximize the benefits of IFRS adoption, companies should invest in continuous training for their financial teams to stay updated on the latest changes in IFRS standards and their implications on financial reporting.

5.2.3 Monitoring and Enforcement: Regulators and industry bodies should monitor and enforce compliance with IFRS, particularly for firms with weaker governance frameworks, to ensure that all firms adhere to the standards and provide reliable financial information.

5.2.4 Encourage Transparency: Companies should encourage greater transparency in financial reporting by providing clear and detailed disclosures that align with IFRS, thus enhancing the trust of investors and other stakeholders.

5.2.5 Assess the Role of IFRS in Different Sectors: It is recommended that firms in different sectors assess how IFRS adoption impacts their specific industry dynamics and adjust their reporting practices accordingly to reflect the standards' relevance and applicability.

5.2.6 Promote Stakeholder Engagement: Companies should engage with stakeholders, including investors and analysts, to understand how IFRS adoption influences their performance metrics and to ensure that the information disclosed is meaningful for decision-making.

By adopting these recommendations, firms can enhance their performance through more accurate financial reporting, improved governance, and a greater ability to meet international financial standards.

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