

Impact of Corporate Social Responsibility on Corporate Financial Sustainability During Crisis Time: A Study On EGX Companies

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Abstract:

This paper investigates the relationship between Corporate Social Responsibility (CSR) and Corporate Financial Sustainability (CFS), with a specific focus on the moderating role of Financial Distress (FD). Employing a quantitative and deductive research design, the study examines data from companies listed on the S&P/EGX ESG Index between 2019 and 2023, a period marked by the COVID-19 pandemic and the Russian Ukrainian war. These crises provided a unique context to explore CSR's impact on financial sustainability under economic uncertainty, particularly in Egypt, where empirical research on CSR remains sparse. The study evaluates CSR through its Environmental and Social (ES) and Governance (G) dimensions, alongside total ESG scores. Financial sustainability is measured using indicators such as Return on Assets (ROA) and Return on Equity (ROE), while financial distress is quantified using the Altman Z-score. The findings demonstrate that CSR positively influences financial sustainability, particularly in firms with higher environmental and social engagement. Governance practices, though occasionally yielding weaker direct effects, significantly mitigate risks during financial distress. Additionally, the results highlight that CSR serves as a strategic tool for enhancing resilience, stakeholder trust, and long-term financial performance. This research underscores the importance of integrating CSR into corporate strategy to achieve financial sustainability and meet societal expectations. It provides practical recommendations for corporate managers, policymakers, and investors, emphasizing CSR as a dual financial and ethical imperative. The study concludes by identifying future research directions, including sector-specific CSR impacts, longitudinal analysis, and cross-regional comparisons to further enhance the understanding of CSR's role in corporate financial sustainability.

Keywords: CSR; financial sustainability; financial distress; crisis time; EGX

1.1 Introduction

In the context of rising social and environmental awareness, sustainable performance—the ability of businesses to operate without harming societal well-being or environmental quality—has become crucial for maintaining competitiveness in both national and international markets (Feng, Akram, Hieu, & Tien, 2021). While theories like stakeholder theory emphasize that CSR strengthens relationships with stakeholders and increases financial worth, others, such as agency theory, argue that CSR costs shareholders and may detract from corporate performance. Previous findings on the relationship between CSR and Corporate Financial Performance (CFP) remain mixed, with studies reporting positive, weak, or even negative associations (Awa, Etim, & Ogbonda, 2024). CSR offers benefits such as enhanced reputation, stakeholder goodwill, and improved employee productivity (Eldomiati, Soliman, Fikri, & Anis, 2016). However, these benefits must outweigh the costs for CSR to be economically viable. Financial performance remains critical for corporate success and sustainability, particularly in times of economic uncertainty when financial resources are constrained (McLaren & Struwig, 2019). Assessing financial sustainability helps ensure optimal resource allocation for long-term value creation. The Triple Bottom Line (TBL) framework, introduced by John Elkington, evaluates a company's sustainability through three dimensions: social, environmental, and economic. Businesses adhering to the TBL model focus on social responsibility and environmental preservation alongside profitability, aligning with growing consumer and regulatory demands (Pislaru, 2019).

2. Literature Review

2.1 Sustainability

The idea of sustainability was first introduced in the environmental interpretation at the 1970s and 1980s United Nations conferences. The fundamental idea of sustainability is that current and future generations should be explicitly connected. Finance's discounting ability makes it uniquely adapted to storing both current and upcoming changes. (Soppe, 2004).

Sustainability is defined by the United Nations World Commission on Environment and Development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs.". The idea of sustainability, which was later conceived as the "Triple bottom line" (TBL) concept, is based on striking a balance between the values of integrity (environment), equity (society), and prosperity (economy). (Jha & Rangarajan, 2020).

2.2 Corporate Social Responsibility

2.2.1 Definition

CSR has been extensively researched. However, a consensus on its definitions, ideas, metrics, and principles has yet to be reached (Bag & Omrane, 2022). The most widely used and widely accepted definition of corporate social responsibility (CSR) is provided by the European Commission, which defines it as "actions engaged by the companies over and above their legal obligations towards the community and the environment." The interests of stakeholders other than shareholders are covered by such a definition. According to (Bag & Omrane, 2022), its idea aligns with McWilliams and Siegel (2000, p. 17), who assumed that corporate social responsibility (CSR) amounted to "actions that appear to serve some societal good, beyond the interests of the corporation and that which is required by law". According to the World Bank (WB), corporate social responsibility (CSR) is the dedication of businesses to support sustainable economic development by collaborating with workers, their families, the local community, and society at large to enhance their quality of life in ways that benefit both company and development. CSR, on the other hand, is "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis," according to the European Commission's (EC) working definition (Darrag & Crowther, 2016). CSR is also described as "the ongoing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large" by the World Business Council for Sustainable Development. As stated by (Arafa & el Hawary, 2020)

For more than half a century, the concept of corporate social responsibility, or CSR, has been present in management science. In 2016, 82% of S&P 500 businesses published Corporate Sustainability Reports, compared to less than half of Fortune 500 corporations at the end of the 1970s who did so in their annual reports (G&A Institute Flash Report, 2017). The majority of governments, businesses, non-governmental organizations, consumers, and international organizations (including the UN and World Bank) had already embraced and approved the CSR concept by the late 1990s. (Witek-Crabb, 2018).

2.2.2 Corporate Social Responsibility and Triple bottom line

In recent years, the interaction between CSR and sustainable development has been strengthened on both theoretical and practical level. According to (Ye, Kueh, Hou, Liu, & Yu, 2020), there is a rising trend in academic fields focusing on how corporate has contributed to sustainable development. What's more, corporate sustainability (CS) is considered to be the company version of SD (Steurer et al., 2005), and it is said to be used

as the synonym of corporate responsibility in the United Nations Global Compact 2013. During a disaster, company CSR activities are usually expected by the public to help relieve pain. However, from a slack resource perspective, companies affected by disasters must reduce their investment in CSR to contain their costs. But (Qiu, Shaukat, & Tharyan, 2020) sees this paradox makes it worthwhile to observe whether investing in CSR during a disaster to consolidate corporate financial performance is wise. Stakeholder attention theory and the social capital concept may offer useful perspectives.

2.2.3 Environmental, Social and Governance (ESG)

The increasing focus on sustainability, driven by concerns about climate change, geopolitical instability, and financial uncertainty, has elevated the importance of Environmental, Social, and Governance (ESG) factors in investment and corporate strategies. Since its introduction in the 2006 UNPRI report, ESG has gained momentum through initiatives such as the EU's 2014 non-financial reporting directive, requiring large enterprises to disclose ESG-related information (Iazzolino, Bruni, Veltri, Morea, & Baldissarro, 2023). This paradigm shift has encouraged businesses to prioritize environmental protection, social responsibility, and governance, transitioning from traditional profit-centric models to strategies maximizing societal and environmental interests. The COVID-19 pandemic further emphasized ESG's relevance as a risk management and competitive strategy tool (Iazzolino, Bruni, Veltri, Morea, & Baldissarro, 2023).

Environmental sustainability, driven by corporate social responsibility (CSR), has proven essential for competitiveness and conservation. Companies integrating environmental CSR enhance financial and environmental performance, particularly in developing countries (Ma, Chishti, Durrani, Bashir, Safdar, & Hussain, 2023). Governance practices also link strongly to CSR, as effective governance ensures stakeholder interests are well-managed, influencing financial and social outcomes (El Domiaty, 2014). Employees play a vital role in sustainability, with CSR fostering engagement, innovation, and environmental stewardship (Ma, Chishti, Durrani, Bashir, Safdar, & Hussain, 2023). Community-focused CSR initiatives, such as education and clean water projects, not only strengthen social structures but also improve corporate reputation and effectiveness (Ma, Chishti, Durrani, Bashir, Safdar, & Hussain, 2023). Similarly, customer-oriented CSR fosters loyalty and drives eco-friendly product demand, encouraging firms to adopt sustainable business practices (Ma, Chishti, Durrani, Bashir, Safdar, & Hussain, 2023)

2.2.4 Corporate Social responsibility Measure

Quantifying a company's social responsibility often involves analyzing its ESG scores,

which assess performance across three dimensions: Environmental (e.g., climate change, energy efficiency), Social (e.g., human rights, gender equality), and Governance (e.g., board independence, ethics, and reporting). These scores are disclosed via sustainability indices and rating agencies (Coelho, Jayantilal, & Ferreira, 2023). CSR initiatives can be categorized into four groups: environment-related CSR, which focuses on minimizing environmental impacts (e.g., reducing waste and pollutants); workplace-related CSR, addressing employee well-being and rights (e.g., health and safety, pay equity); community-related CSR, which emphasizes relationships with local communities affected by business operations; and marketplace-related CSR, involving ethical practices along the supply chain (El Kayaly, 2014). CSR's relationship with profitability varies across organizations but is linked to long-term financial performance. Studies suggest CSR can be evaluated using an index combining economic, social, and environmental factors (Muraleetharan, Velnamby, & Nimalathasan, 2020).

2.2.5 Corporate Social Responsibility Index

Launched on March 22, 2007, the Egyptian Corporate Responsibility Index (CSR Index) was developed through a collaboration between the EIoD, the Egyptian Corporate Responsibility Center, and Standard & Poor's. It was the first ESG index in the MENA region and the second globally, designed to assess the volume of information companies disclose regarding corporate governance, environmental practices, and social responsibility. The index evaluates securities representative of the Egyptian equity market, selecting 30 companies annually from the EGX100 Index based on size, liquidity, and CSR performance.

The evaluation process for the CSR Index involves two screening stages as outlined in the S&P/EGX ESG Index Methodology (2023):

Stage 1: Assesses companies' disclosure practices, analyzing public information such as annual reports, press releases, and disclosures to the EGX.

Stage 2: Reviews company practices through media coverage, CSR reports, and consultations with regulatory agencies, ministries, and NGOs to identify potential violations or adverse information.

2.3 Corporate Financial Sustainability (CFS)

2.3.1 Definition

Financial sustainability is broadly defined as the ability of a business to operate continuously by generating sufficient revenue to cover costs, maintain assets, and meet present and future obligations (Kakati & Roy, 2021). While the concept varies across sectors, its core revolves around achieving self-sufficiency and stability over the long

term. It also encompasses the capacity to build and sustain a strong financial foundation, ensuring operational continuity through optimal investments and financing strategies (Qazi & Nobanee, 2020); (Zabolotnyy & Wasilewski, 2019).

From an investment perspective, financial sustainability is critical; a firm's inability to demonstrate sustainability discourages investment. High financial sustainability serves as a management control tool, complementing shareholder value by mitigating refinancing risks and reducing insolvency threats. This is particularly important in imperfect capital markets with financing constraints, as it supports improved financial performance (Gleißner, Günther, & Walkshäusl, 2022).

2.3.2 Financial sustainability Indicators

Financial sustainability is a multifaceted concept encompassing a company's ability to generate profit, maintain liquidity, meet obligations, and sustain operations without external support. It involves key factors such as profitability, operational efficiency, income diversity, debt levels, and investment portfolio management (Kakati & Roy, 2021); (Qazi & Nobanee, 2020) Metrics like Return on Assets (ROA) and Return on Investment (ROI) are critical for assessing financial performance and investor confidence, while hybrid models combining market-based and accounting-based measures enhance the prediction of earnings and growth prospects (Amani & Fadlalla, 2015).

Studies show that factors such as capital adequacy ratio (CAR) and loan-to-deposit ratio (LDR) positively influence financial sustainability, while operating expense-to-operating income ratio (OEIO) negatively impacts it (Rustam, 2022). Additionally, advanced methods like fuzzy logic provide nuanced evaluations by incorporating ambiguous financial variables, forming indicators of value and continuity that predict sustainability (Zabolotnyy & Wasilewski, 2019).

Fluctuations in financial metrics like ROA highlight the need for adaptive management strategies to ensure stability amid challenges (Said, Annuar, & Hamdan, 2019). A firm's ability to balance risk and return, align stakeholder interests, and improve operational efficiency underpins its long-term sustainability and resilience in competitive markets (Semaw Henock, 2019); (Zabolotnyy & Wasilewski, 2019).

2.4 Financial Distress

2.4.1 Financial Distress Definition

Financial distress occurs when a firm struggles to meet its financial obligations due to inadequate operating cash flows, persistent losses, or breaches of loan contracts. It is often exacerbated during economic downturns or crises, as seen during the Asian financial crisis (1997) and the global financial crisis (2007–2008) (Ikpesu, Adegbite, & Amaeshi, 2020). Indicators of distress include declining performance, failure, insolvency, and

default, which stem from liquidity issues and reduced profitability (Thakor, 2014). Theories explaining financial distress include Cash Management Theory, which attributes distress to poor cash flow management. Effective fund utilization is critical to prevent imbalances between cash inflows and outflows (Ikpesu, Adegbite, & Amaeshi, 2020). Credit Risk Theory, which highlights that improper management of credit risk—such as counterparty defaults—can jeopardize an organization’s survival (Ikpesu, Adegbite, & Amaeshi, 2020). Pecking Order Theory, which emphasizes reliance on internal financing to preserve stability and minimize debt-related distress (Wesa, 2018). Trade-Off Theory, which suggests that while debt can enhance firm value, excessive debt increases financial distress risk, emphasizing the need for an optimal capital structure (Modigliani and Miller, 1963). Firms facing distress often resort to strategies such as mergers, acquisitions, restructuring, and renegotiation of loans to ensure survival (Ikpesu, Adegbite, & Amaeshi, 2020).

2.4.2 Altman Z-Score

Regarding the measurement of financial distress, the current literature mainly uses the financial index method. Among the representative financial indicator methods, the typical way is the Z score proposed by Altman in 1968, which is widely used in the research of financial distress and its prediction. (Wu, 2020).

2.5 Corporate Social responsibility and Financial Performance

The relationship between corporate social responsibility (CSR) and corporate financial performance (CFP) remains debated. While some studies suggest that CSR can enhance financial performance by improving stakeholder trust, reputation, and competitive advantage, others highlight mixed or negative outcomes depending on the type and combination of CSR practices adopted (Wu, Shao, Yang, Ding, & Zhang, 2020); (Cavaco & Crifo, 2014). For instance, (Cavaco & Crifo, 2014) noted that specific combinations of CSR practices yield superior financial outcomes, while conflicting practices might undermine performance. Similarly, (Bag & Omrane, 2022) found a positive relationship between CSR and long-term business performance when CSR is integrated into the firm’s strategy.

CSR impacts financial outcomes via multiple pathways: Stakeholder trust (Wu, 2020), Reputation (Fourati & Dammak, 2021), Risk management (Wu, 2020). However, the impact of CSR varies across dimensions. For example, (Nollet, Filis, & Mitrokostas, 2016) observed a U-shaped relationship between CSR and accounting-based CFP measures, where benefits materialize only after significant CSR investment. Governance components were found to be key drivers of positive outcomes, while aggregated ESG scores often mask the distinct effects of environmental and social factors. Conversely, (Jyoti & Khanna, 2021) reported negative relationships between environmental scores and

financial metrics like ROA and ROCE, indicating that not all CSR dimensions contribute equally to performance.

2.6 Corporate Social responsibility and Financial Sustainability

The relationship between Corporate Social Responsibility (CSR) and Corporate Financial Sustainability (CFS) has been a topic of debate since the 1980s, driven by the question, “Does it pay to do well?” While some studies suggest CSR provides tangible financial benefits, others argue it serves societal rather than corporate interests (Wu, Shao, Yang, Ding, & Zhang, 2020); (Sharma, Chakraborty, Rao, & Lobo, 2023). CSR is increasingly seen as a strategic tool for creating positive social value, building brand reputation, and fostering long-term business growth (Feng, Akram, Hieu, & Tien, 2021). CSR’s role in financial sustainability is particularly evident during crises. Companies adhering to CSR principles often demonstrate resilience by maintaining liquidity and resisting financial pressures, such as high energy costs or reduced capital access. The Triple Bottom Line model underscores the necessity of integrating financial, social, and environmental aspects for holistic sustainability (Miljenovic, 2015). Firms applying CSR strategically are better positioned to sustain operations during economic downturns, providing long-term value to stakeholders. However, (Witek-Crabb, 2018) found no direct correlation between CSR maturity and financial sustainability, suggesting the relationship depends on factors such as company size and sector. While CSR contributes to global sustainability, its direct impact on firm-level financial performance remains inconclusive. The complexity of evaluating CSR and financial sustainability through aggregated measures may obscure specific links between them. Conversely, (Okafor, Adeyemi, & Adeniji, 2021) demonstrated that CSR significantly enhances ROA and ROE, particularly in tech firms, when aligned with strategic goals. Effective corporate governance acts as a key moderator, amplifying CSR’s benefits and reinforcing the notion that socially responsible practices are sound business strategies.

2.7 Financial Distress moderating the impact of CSR on CFP

The fulfillment of Corporate Social Responsibility (CSR) is closely tied to a firm's financial condition. Firms in financial distress prioritize alleviating financial strain and shareholder interests over societal benefits, while financially stable companies are better positioned to engage in CSR activities (Wu, 2020). Stability enhances the positive impact of CSR on Corporate Financial Performance (CFP), with state-owned enterprises (SOEs) exhibiting stronger CSR-CFP linkages. Empirical evidence supports the notion that proactive CSR practices reduce financial risk and promote financial sustainability (Wu, 2020). CSR improves creditworthiness, reduces the risk of financial defaults, and enhances access to financing by addressing community, employee relations, diversity, and environmental

dimensions (Boubaker, Cellier, Manita, & Saeed, 2020). During financial crises, the relationship between financial distress and corporate performance becomes more pronounced. Firms with poor financial structures (e.g., high leverage) face amplified risks, negatively affecting performance and increasing FD. Conversely, companies with strong CSR commitments demonstrate greater resilience during crises, benefiting from reduced financing costs and improved stakeholder trust (Agostini, 2018); (Wu, Shao, Yang, Ding, & Zhang, 2020).

3.1 Research Design

This study employs a deductive quantitative research design, beginning with a theoretical framework and existing literature to formulate hypotheses for empirical testing (Saunders, Lewis, & Thornhill, 2023). The quantitative approach is well-suited for analyzing the relationship between Corporate Social Responsibility (CSR) and financial sustainability (CFS) using measurable financial and CSR data. The research focuses on companies listed in the S&P/EGX ESG Index, spanning 2019 to 2023, to capture the effects of major crises—the COVID-19 pandemic and the Russian-Ukrainian war—on CSR and financial sustainability. This timeframe and geographical focus on Egypt address a gap in empirical studies on CSR in emerging markets, offering opportunities for novel insights.

3.2 Variables and Measurement

In this study, three key variables are central: **Corporate Social Responsibility (CSR)**, **Corporate Financial Sustainability (CFS)**, and **Financial Distress (FD)**. Each of these variables is operationalized with specific measures.

3.2.1 Corporate Financial Sustainability (CFS)

Financial Sustainability refers to a firm's ability to achieve long-term financial health, profitability, and solvency. It is measured using multiple financial performance indicators, which provide a comprehensive view of a firm's financial condition. The following measures are used:

- **Return on Assets (ROA):** ROA is calculated as the ratio of net income to total assets. It indicates how efficiently a company uses its assets to generate profit. A higher ROA suggests better financial sustainability.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

- **Return on Equity (ROE):** ROE is calculated as the ratio of net income to shareholder equity. It measures the profitability of equity investments and indicates how well a company generates returns for its shareholders.

$$ROE = \frac{\text{Net Income}}{\text{Shareholder Equity}}$$

3.2.2 Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) refers to the degree to which a company participates in activities that benefit society, such as environmental sustainability, social welfare, ethical labor standards, and community involvement.

The Environment, Social, and Governance (ESG) Index for Egypt was developed by the Egyptian Institute of Directors, Standard & Poor's, and Crisil. The ESG research and scoring are carried out by the EIoD, under the guidance of Standard & Poor's and Crisil, with support from the Egyptian Stock Exchange (EGX), which also tested historical data for consistency.

The S&P/EGX ESG Index offers the access to 30 of the top-performing stocks in the Egyptian market, selected based on their environmental, social, and governance (ESG) performance. The index evaluates ESG practices using quantitative data rather than subjective criteria, employing a unique and innovative methodology that is standardized by S&P Indices.

3.2.3 Moderating Variable: Financial Distress (FD)

Financial distress is defined as the condition where a company faces significant financial challenges that threaten its solvency or operational continuity. Financial distress is operationalized using the Altman Z-Score, a widely accepted measure in financial research. The Z-Score combines multiple financial ratios, including liquidity, profitability, and leverage, to predict the likelihood of bankruptcy.

The formula for the Z-Score is as follows:

$$Z = 0.012X1 + 0.014X2 + 0.033X3 + 0.006X4 + 0.999X5$$

Among them, **X1** represents the **working capital/total assets**, **X2** equals the **retained earnings/total assets**, **X3** is the **profit before interest and tax/total assets**, **X4** represents the **total market value of common stock and the preferred stock/total book value of liabilities**, and **X5** is the **total sales revenue/total assets**. The model is a comprehensive reflection of the financial situation of an enterprise. Therefore, the Altman Z score is adopted to measure financial distress in order to obtain objective conclusions. In particular, a high Z score means that the enterprise is less likely to face financial distress, so the financial risk is lower.

While for the non-manufacturing companies, Altman developed a different Z score, which is:

$$Z = 0.0656X1 + 0.0326X2 + 0.0672X3 + 0.0105X4$$

Among them, **X1** represents the **working capital/total assets**, **X2** equals the **retained earnings/total assets**, **X3** is the **profit before interest and tax/total assets** and **X4** represents the **Book Value of Equity/total book value of liabilities**.

3.3 Population and Sample

The population for this research is the Egyptian Stock Exchange (EGX), formally known as the Egyptian Exchange. It is the primary securities market in Egypt and a critical component of the country's financial infrastructure. According to the availability of secondary data of ESG scores, the sample of this research is already sampled according to the S&P/EGX ESG Index

Regarding the CFS, the research used the financial data of the population for the period of this research (2019 to 2023) from its financial statements.

The classification of these companies is:

Table 3.1: Classification of Companies

Sector	No. of Companies	Percentage
Financial Services	24	16%
Real State	22	15%
Food Industries	14	9%
Petrochemicals	12	8%
Consumer Services	12	8%
Banking Sector	12	8%
Materials Industries	8	5%
Healthcare Services	8	5%
Apparel Industries	7	5%
Transportation Services	7	5%
Pharmaceutical Industries	5	3%
Capital Goods	5	3%
Telecommunication	5	3%
Construction	5	3%
Automotive Industry	4	3%
Total Companies	150	

3.4 Research Hypothesis

The hypothesis anticipated the impact of CSR on CFS with the moderation of financial distress in Egyptian listed companies that scored in the S&P/EGX ESG Index. A total of 150 observations from 2019 to 2023 to test this impact and moderation effect, the

hypothesis recognizes the potential for CSR to go beyond the CFS. It contends that ESG practices have the power to increase and affect the corporate ROA and ROE even during the existence of FD.

H1: CSR has an impact on ROA

H2: FD has a moderating role on CSR-ROA relationship

These hypotheses investigate the relationship between Corporate Social Responsibility and the Return on Asset of companies, proposing that the environmental, social and governance activities have the impact on ROA with the moderation of FD (Shobhwani & Lodha, 2023). The hypothesis tests 2 cases for each model of 3 models:

Model 1: Effect of Environmental and Social (ES) scores on ROA

Model 2: Effect of Governance (G) scores on ROA

Model 3: Effect of overall ESG scores on ROA

H3: CSR has an impact on ROE

H4: FD has a moderating role on CSR-ROE relationship

These hypotheses investigate the relationship between Corporate Social Responsibility and the Return on Equity of companies, proposing that the environmental, social and governance activities have the impact on ROE with the moderation of FD (Aydogmus, Gulay, & Ergun, 2022). The hypothesis tests 2 cases for each model of 3 models:

Model 4: Effect of Environmental and Social (ES) scores on ROE

Model 5: Effect of Governance (G) scores on ROE

Model 6: Effect of overall ESG scores on ROE

H5: CSR has an impact on Corporate Financial Sustainability (CFS)

H6: FD has a moderating role on CSR-CFS relationship

These hypotheses investigate the relationship between Corporate Social Responsibility and the construct of Corporate Financial sustainability (ROA and ROE), proposing that the environmental, social and governance activities have the impact on CFS (Fu & Li, 2023).

The hypothesis tests 2 cases for each model of 3 models:

Model 7: Effect of Environmental and Social (ES) scores on CFS

Model 8: Effect of Governance (G) scores on CFS

Model 9: Effect of overall ESG scores on CFS

3.5 Research Framework

The visual model presented below represents three types of variables: Corporate Social Responsibility CSR as independent variable, Corporate Financial Sustainability CFS as dependent variable and Financial Distress DT as moderating variable. The investigation

will explore the interrelation among these variables. In this study, two types of variables are considered:

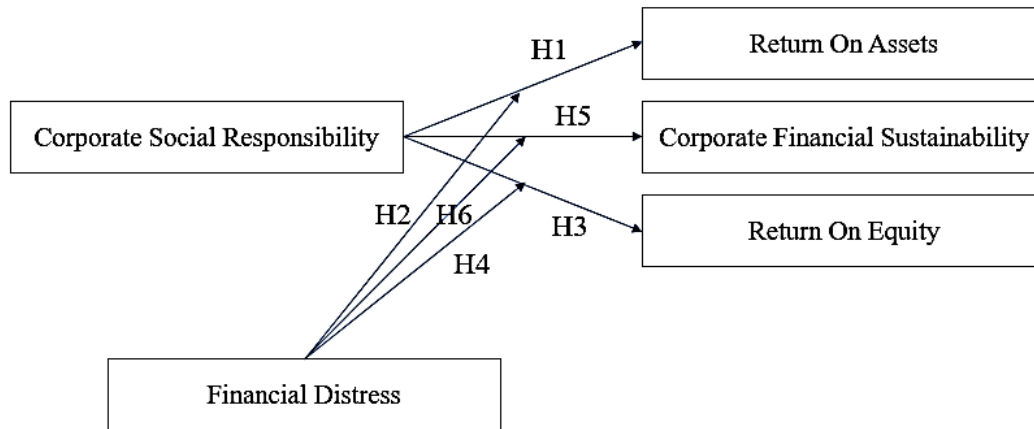


Fig. 3.1 Research Model

- H1: CSR has an impact on ROA
- H2: FD has a moderating role on CSR-ROA relationship
- H3: CSR has an impact on ROE
- H4: FD has a moderating role on CSR-ROE relationship
- H5: CSR has an impact on Corporate Financial Sustainability (CFS)
- H6: FD has a moderating role on CSR-CFS relationship

The research model shown in Fig.3.1, includes CSR as the independent variable, CFS as dependent variables, and FD as moderating variable which aligns with a reflective research model. In this reflective model, the change of CSR scores (the construct of ESG Scores) are expected to lead to changes in CFS (the construct of ROA, ROE).

4.1 Descriptive Statistics

The sample includes 150 companies: 94 non-manufacturing and 56 manufacturing firms, allowing for meaningful sectoral comparisons. Environmental and Social (ES) Scores: Manufacturing companies have a higher mean ES score (95.89 vs. 88.13) with greater variability, reflecting their significant investment in environmental and social initiatives, possibly due to higher environmental impact. Governance Scores: Non-manufacturing companies outperform manufacturing firms in governance (mean: 84.15 vs. 78.67) with slightly higher variability, indicating greater emphasis on governance practices in this

sector. ESG Scores: Mean ESG scores are comparable (manufacturing: 127.59, non-manufacturing: 126.50), suggesting balanced overall CSR performance across sectors despite differences in individual components. Financial Distress (FD): Non-manufacturing companies exhibit higher mean FD scores (4.65 vs. 3.43) and greater variability, indicating more financial stress and diversity in financial health. Return on Assets (ROA) and Return on Equity (ROE): Manufacturing companies demonstrate higher ROA (9.77% vs. 4.44%), indicating better asset utilization, while non-manufacturing firms show higher mean ROE (18.09% vs. 16.45%), reflecting stronger equity returns. However, manufacturing firms exhibit higher ROE variability, suggesting diverse financial performance. Corporate Financial Sustainability (CFS): Manufacturing firms have a slightly higher mean CFS (13.11 vs. 11.27) but with much greater variability, indicating sector-specific differences in financial sustainability.

Table 4.1: Descriptive Statistic

Manufacturing	Descriptive Statistics	Environmental and Social Score	Governance Score	Total ESG Score	Financial Distress	Return on Asset	Return on Equity	Corporate Social Responsibility	Corporate Financial Sustainability
	Notation	ES	G	ESG	FD	ROA	ROE	CSR	CFS
Non-manufacturing	N	94	94	94	94	94	94	94	94
	Min	65.00	63.70	90.73	-58.32	-100.4	-11.64	86.71	-43.07
	Max	147.00	127.00	181.00	90.57	36.29	95.96	151.67	46.63
	Mean	88.13	84.15	126.50	4.65	4.44	18.09	99.59	11.27
	Median	86.30	82.05	129.46	2.95	3.51	16.82	97.42	10.94
	SD	13.59	10.76	17.27	13.23	12.52	12.68	9.79	9.65
Manufacturing	N	56	56	56	56	56	56	56	56
	Min	65.00	64.80	92.68	-0.09	-16.86	-98.19	87.63	-45.57
	Max	130.40	106.30	153.90	9.26	41.33	129.15	123.90	83.41
	Mean	95.89	78.67	127.59	3.43	9.77	16.45	100.72	13.11
	Median	98.05	77.75	130.09	2.73	8.04	17.17	99.17	12.39
	SD	16.50	9.14	16.66	2.06	10.92	30.03	8.90	19.49
Total	N	150	150	150	150	150	150	150	150

Min	65.00	63.70	90.73	-58.32	-100.4	-98.19	86.71	-45.57
Max	147.00	127.00	181.00	90.57	41.33	129.15	151.67	83.41
Mean	91.03	82.10	126.91	4.20	6.43	17.48	100.01	11.96
Median	88.70	80.90	129.65	2.81	5.67	17.07	97.91	11.88
SD	15.17	10.49	17.00	10.54	12.18	20.83	9.45	14.11

Source: SPSS V. 29 Software

Table 4.2: Correlation between the variables

		Environmental and Social Score	Governance Score	Total ESG Score	Financial Distress	Return on Asset	Return on Equity
Environmental and Social Score	r	--					
	n	150					
Governance Score	r	-.067	--				
	P	.418					
	n	150	150				
Total ESG Score	r	-.001	.550***	--			
	P	.992	<.001				
	n	150	150	150			
Financial Distress	r	-.052	-.040	-.005	--		
	P	.531	.626	.951			
	n	150	150	150	150		
Return on Asset	r	.178*	-.130	-.110	.644***	--	
	P	.029	.113	.182	<.001		
	n	150	150	150	150	150	
Return on Equity	r	.233**	-.103	-.145	.097	.422***	--
	P	.004	.208	.076	.239	<.001	
	n	150	150	150	150	150	150

r=Pearson Correlation, P=P-value, n=sample size; ***P < 0.001; **P < 0.01; *P < 0.05; ^{NSP} > 0.05.

Source: SPSS V. 29 Software

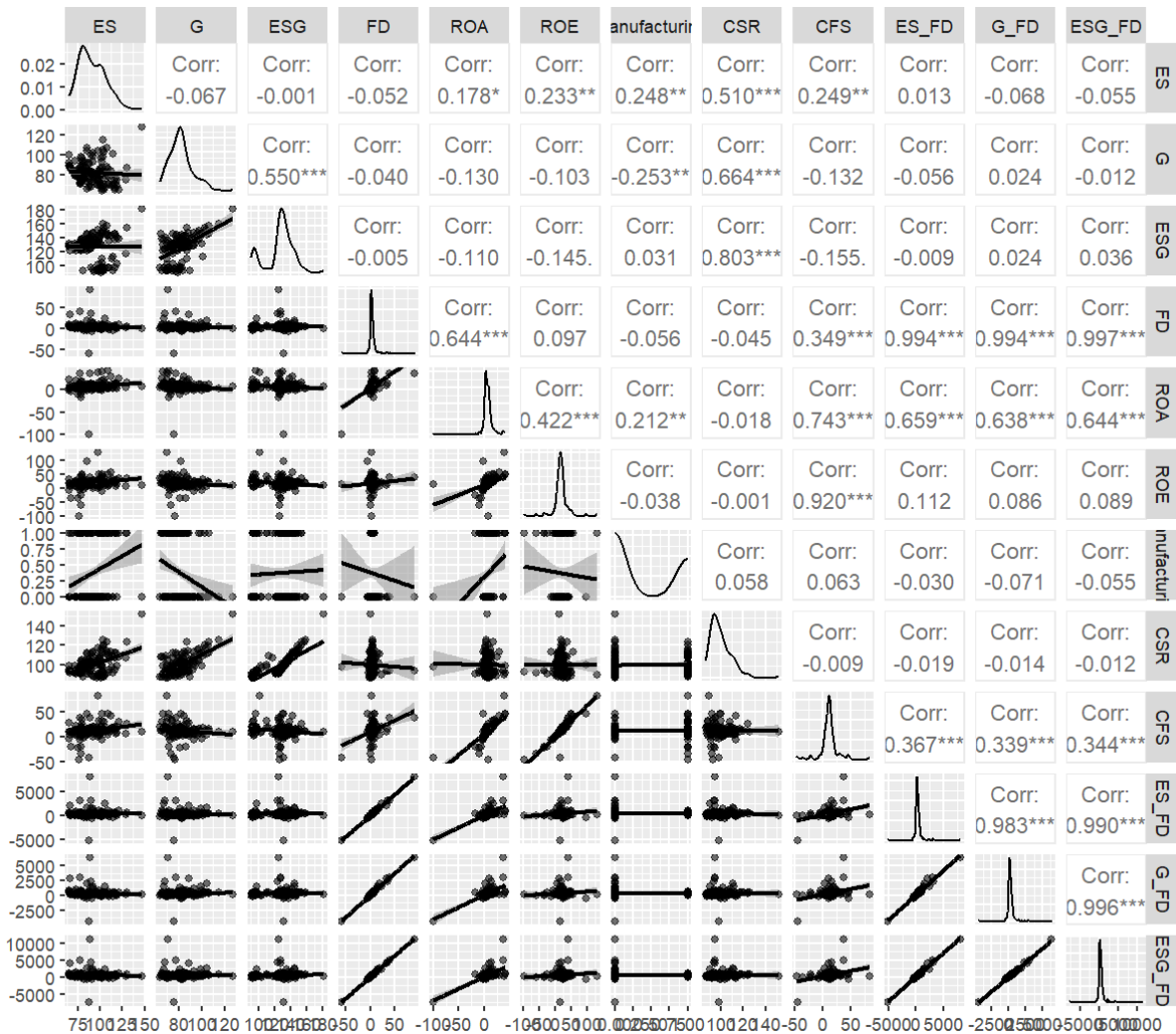


Fig. 4.4: Visualization of correlations, distributions and scatter plots

Table 4.2 and Figure 4.4 show the matrix of Pearson correlation coefficients between all variables. The results indicated that:

- **Environmental and Social Score** has a statistical significant positive relationship with both *Return on Asset* ($r(150) = .178, P < 0.05$) and *Return on Equity* since ($r(150) = .233, P < 0.01$).
 - **Governance Score** has NO statistical significant relationship with both *Return on Asset* ($r(150) = -.130, P > 0.05$) and *Return on Equity* since ($r(150) = -.103, P > 0.05$).
 - **Total ESG Score** has NO statistical significant relationship with both *Return on Asset* ($r(150) = -.110, P > 0.05$) and *Return on Equity* since ($r(150) = -.145, P > 0.05$).
- Financial Distress** has a statistical significant positive relationship with *Return on Asset* ($r(150) = .644, P < 0.001$) and NO statistical significant relationship with *Return on*

Equity since $(r(150) = .097, P > 0.05)$

4.2 Hypothesis Testing

Our study employs a multifaceted approach, investigating both direct effects and moderated relationships, with Financial Distress (FD) serving as a key moderating variable. We have structured our analysis around nine distinct models, each accompanied by a corresponding graph to visually represent the relationships and interactions. These models are designed to provide a nuanced understanding of how different aspects of CSR impact various measures of financial performance, both directly and under the influence of financial distress.

Our hypothesis testing is organized into three main categories:

1. **Impact on Return on Assets (ROA):**

- o Sub Hypothesis 1.1: Effect of Environmental and Social (ES) scores on ROA
- o Sub Hypothesis 1.2: Effect of Governance (G) scores on ROA
- o Sub Hypothesis 1.3: Effect of overall ESG scores on ROA

2. **Impact on Return on Assets (ROA) with moderating role of FD:**

- o Sub Hypothesis 2.1: Effect of Environmental and Social (ES) scores on ROA with moderating role of FD
- o Sub Hypothesis 2.2: Effect of Governance (G) scores on ROA with moderating role of FD
- o Sub Hypothesis 2.3: Effect of overall ESG scores on ROA with moderating role of FD

3. **Impact on Return on Equity (ROE):**

- o Sub Hypothesis 3.1: Effect of ES scores on ROE
- o Sub Hypothesis 3.2: Effect of G scores on ROE
- o Sub Hypothesis 3.3: Effect of overall ESG scores on ROE

4. **Impact on Return on Equity (ROE) with moderating role of FD:**

- o Sub Hypothesis 4.1: Effect of ES scores on ROE with moderating role of FD
- o Sub Hypothesis 4.2: Effect of G scores on ROE with moderating role of FD
- o Sub Hypothesis 4.3: Effect of overall ESG scores on ROE with moderating role of FD

5. **Impact on Corporate Financial Sustainability (CFS):**

- o Sub Hypothesis 5.1: Effect of ES scores on CFS
- o Sub Hypothesis 5.2: Effect of G scores on CFS
- o Sub Hypothesis 5.3: Effect of overall ESG scores on CFS

6. Impact on Corporate Financial Sustainability (CFS) with moderating role of FD:
 - o Sub Hypothesis 6.1: Effect of ES scores on CFS with moderating role of FD
 - o Sub Hypothesis 6.2: Effect of G scores on CFS with moderating role of FD
 - o Sub Hypothesis 6.3: Effect of overall ESG scores on CFS with moderating role of FD

The following sections will present the detailed results and interpretations for each of the nine models, supported by statistical evidence and visual representations through interaction plot graphs.

4.2.1 Impact on Return on Assets

Standardized Models 1-3 examine the relationship between ES, G and ESG Scores respectively on Return on Assets (ROA), including the moderating effect of Financial Distress (FD).

Table 4.4: Model 1; Effect of ES on ROA

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H1.1	Environmental and Social Score -> ROA	0.17	2.562	0.01	0.072	0.333	0.054	1
H2.1	ES*FD -> ROA	0.657	5.303	0	0.392	0.862	0.804	1
R-square = 0.463; Q-square = 0.398								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
<i>Source:</i> SmartPLS 3 Software								

The results of hypothesis testing in Table 4.4 and Figure 4.5 revealed that:

- *Environmental and Social Score* yielded a statistical significant positive direct effect on *ROA* since ($\beta = 0.17, t = 2.562, P < 0.01$), consequently, **H1.1 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this positive relationship. The effect size (f-square) of 0.054 suggests a small but meaningful practical significance.
- The interaction term (ES*FD) has a strong positive and highly significant effect on ROA. This indicates that Financial Distress significantly moderates the relationship between ES Score and ROA. The large effect size (f-square = 0.804) suggests that this moderation effect has substantial practical significance, consequently, **H2.1 is confirmed**.

- The model explains 46.3% of the variance in ROA, which indicates a moderate explanatory power. The Q-square value of 0.398 suggests that the model has good predictive relevance.

Table 4.5: Model 2; Effect of G on ROA

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H1.2	Governance Score -> ROA	-0.145	1.739	0.082	-0.348	-0.028	0.037	1.001
H2.2	G*FD -> ROA	0.642	4.678	0	0.348	0.849	0.721	1.001
R-square = 0.429; Q-square = 0.341								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.5 and Figure 4.7 revealed that:

- Governance Score has NO statistical significant effect on ROA since ($\beta = -0.145, t = 1.739, P > 0.05$), consequently, **H1.2 is NOT confirmed**. This effect is not statistically significant ($p > 0.05$).
- The interaction term (G*FD) has a strong positive and highly significant effect on ROA. This indicates that Financial Distress significantly moderates the relationship between G Score and ROA. The large effect size (f-square = 0.721) suggests that this moderation effect has substantial practical significance, consequently, **H2.2 is confirmed**.

The model explains 42.9% of the variance in ROA, which indicates a moderate explanatory power. The Q-square value of 0.341 suggests that the model has good predictive relevance.

Table 4.6: Model 3; Effect of ESG on ROA

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H1.3	Total ESG Score -> ROA	-0.133	2.159	0.031	-0.279	-0.031	0.031	1.001
H2.3	ESG*FD -> ROA	0.649	4.751	0	0.329	0.845	0.74	1.001
R-square = 0.432; Q-square = 0.349								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.6 and Figure 4.9 revealed that:

- Total ESG Score has a statistical significant negative direct effect on ROA since ($\beta = -0.133, t = 2.159, P < 0.05$), consequently, **H1.3 is confirmed**.
- The interaction term (ESG*FD) has a strong positive and highly significant effect on ROA. This indicates that Financial Distress significantly moderates the relationship between ESG Score and ROA. The large effect size (f-square = 0.74) suggests that this moderation effect has substantial practical significance, consequently, **H2.3 is confirmed**.

The model explains 43.2% of the variance in ROA, which indicates a moderate explanatory power. The Q-square value of 0.349 suggests that the model has good predictive relevance.

4.2.2 Impact on Return on Equity

Models 4-6 examine the relationship between ES, G and ESG Scores respectively on Return on Equity (ROE), including the moderating effect of Financial Distress (FD).

Table 4.7: Model 4; Effect of ES on ROE

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H3.1	Environmental and Social Score -> ROE	0.232	4.011	0	0.122	0.345	0.057	1
H4.1	ES*FD -> ROE	0.109	1.719	0.086	-0.017	0.23	0.013	1
R-square = 0.066; Q-square = 0.057								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.7 and Figure 4.11 revealed that:

- Environmental and Social Score yielded a statistical significant positive direct effect on ROE since ($\beta = 0.232, t = 4.011, P < 0.001$), consequently, **H3.1 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this positive relationship. The effect size (f-square) of 0.057 suggests a small but meaningful practical significance.
- The interaction term (ES*FD) has NO significant effect on ROE. This indicates that Financial Distress doesn't significantly moderate the relationship between ES Score and ROE. The smaller effect size (f-square = 0.013<0.02) suggests that this moderation effect has no practical significance, consequently, **H4.1 is not confirmed**.

The model explains only 6.6% of the variance in ROE, which indicates a very small explanatory power. The Q-square value of 0.057 suggests that the model has lower but acceptable predictive relevance.

Table 4.8: Model 5; Effect of G on ROE

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H3.2	Governance Score -> ROE	-0.106	1.6	0.11	-0.236	0.019	0.011	1.001
H4.2	G*FD -> ROE	0.089	1.498	0.134	-0.047	0.203	0.008	1.001
R-square = 0.019; Q-square = 0.004								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.8 and Figure 4.13 revealed that:

- *Governance Score* has NO significant effect on *ROE* since ($\beta = -0.106, t = 1.6, P = 0.11$), consequently, **H3.2 is not supported**. This effect is not statistically significant ($p > 0.05$) and the confidence interval does include zero, further confirming the absence of this relationship. The effect size (f-square) of 0.011 suggests no meaningful practical significance.
- The interaction term (G*FD) has NO significant effect on ROE. This indicates that Financial Distress doesn't significantly moderate the relationship between G Score and ROE. The effect size (f-square) of 0.008 suggests no meaningful practical significance, so **H4.2 is not supported**.

The model explains only 1.9% of the variance in ROE, which indicates a very small explanatory power. The Q-square value of 0.004 suggests that the model has no predictive relevance.

Table 4.9: Model 6; Effect of ESG on ROE

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H3.3	Total ESG Score -> ROE	-0.149	2.346	0.019	-0.273	-0.028	0.023	1.001
H4.3	ESG*FD -> ROE	0.094	1.515	0.13	-0.034	0.21	0.009	1.001
R-square = 0.03; Q-square = 0.016								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.9 and Figure 4.15 revealed that:

- *Total ESG Score* yielded a statistical significant negative direct effect on *ROE* since ($\beta = -0.149, t = 2.346, P < 0.05$), consequently, **H3.3 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this negative relationship. The effect size (f-square) of 0.023 suggests a small but meaningful practical significance.
- The interaction term (ESG*FD) has NO significant effect on ROE. This indicates that Financial Distress doesn't significantly moderate the relationship between ESG Score and ROE. The smaller effect size (f-square = 0.009<0.02) suggests that this moderation effect has no practical significance, consequently, **H4.3 is not confirmed**.

The model explains only 3% of the variance in ROE, which indicates a very small explanatory power. The Q-square value of 0.016 suggests that the model has lower but acceptable predictive relevance.

4.2.3 Impact on Corporate Financial Sustainability

Models 7-9 examine the relationship between ES, G and ESG Scores respectively on Corporate Financial Sustainability (CFS), including the moderating effect of Financial Distress (FD).

Table 4.10: Model 7; Effect of ES on CFS

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H5.1	Environmental and Social Score -> Corporate Financial Sustainability	0.244	4.362	0	0.138	0.355	0.074	1
H6.1	ES*FD -> Corporate Financial Sustainability	0.364	3.29	0.001	0.139	0.567	0.165	1
R-square = 0.194; Q-square = 0.164								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
Source: SmartPLS 3 Software								

The results of hypothesis testing in Table 4.10 and Figure 4.17 revealed that:

- *Environmental and Social Score* yielded a statistical significant positive direct effect on *Corporate Financial Sustainability* since ($\beta = 0.244, t = 4.362, P < 0.001$), consequently, **H5.1 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this positive relationship. The effect size (f-square) of 0.074 suggests a small but meaningful practical significance.

- The interaction term (ES*FD) has a positive and highly significant effect on Corporate Financial Sustainability. This indicates that Financial Distress significantly moderates the relationship between ES Score and Corporate Financial Sustainability. The moderate effect size (f-square = 0.165) suggests that this moderation effect has good practical significance, consequently, **H6.1 is confirmed**.

The model explains 19.4% of the variance in Corporate Financial Sustainability, which indicates a good explanatory power. The Q-square value of 0.164 suggests that the model has good predictive relevance.

Table 4.11: Model 8; Effect of G on CFS

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H5.2	Governance Score -> Corporate Financial Sustainability	-0.141	2.064	0.039	-0.281	-0.012	0.023	1.001
H6.2	G*FD -> Corporate Financial Sustainability	0.343	2.859	0.004	0.101	0.562	0.136	1.001
R-square = 0.135; Q-square = 0.094								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
<i>Source:</i> SmartPLS 3 Software								

The results of hypothesis testing in Table 4.11 and Figure 4.19 revealed that:

- Governance Score has a statistical significant negative direct effect on Corporate Financial Sustainability since ($\beta = -0.141, t = 2.064, P < 0.05$), consequently, **H5.2 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this negative relationship. The effect size (f-square) of 0.023 suggests a small but meaningful practical significance.
- The interaction term (G*FD) has a positive and highly significant effect on Corporate Financial Sustainability. This indicates that Financial Distress significantly moderates the relationship between G Score and Corporate Financial Sustainability. The effect size (f-square = 0.136) suggests that this moderation effect has good practical significance, consequently, **H6.2 is confirmed**.

The model explains 13.5% of the variance in Corporate Financial Sustainability, which indicates an acceptable explanatory power. The Q-square value of 0.094 suggests that the model has an acceptable predictive relevance.

Table 4.12: Model 9; Effect of ESG on CFS

H	Path	B	t-value	P-value	95% BCCI		f-square	VIF
					LB	UB		
H5.3	Total ESG Score -> Corporate Financial Sustainability	-0.167	2.637	0.008	-0.29	-0.04	0.033	1.001
H6.3	ESG*FD -> Corporate Financial Sustainability	0.35	3.003	0.003	0.104	0.559	0.143	1.001
R-square = 0.146; Q-square = 0.107								
BCCI=Bias-Corrected Confidence Intervals; LB= Lower Bound; UB=Upper Bound.								
<i>Source:</i> SmartPLS 3 Software								

The results of hypothesis testing in Table 4.12 and Figure 4.21 revealed that:

- Total ESG Score has a statistical significant negative direct effect on Corporate Financial Sustainability since ($\beta = -0.167, t = 2.637, P < 0.01$), consequently, **H5.3 is confirmed**. This effect is statistically significant ($p < 0.05$) and the confidence interval does not include zero, further confirming the reliability of this negative relationship. The effect size (f-square) of 0.033 suggests a small but meaningful practical significance.
- The interaction term (ESG*FD) has a positive and highly significant effect on Corporate Financial Sustainability. This indicates that Financial Distress significantly moderates the relationship between ESG Score and Corporate Financial Sustainability. The effect size (f-square = 0.143) suggests that this moderation effect has good practical significance, consequently, **H6.3 is confirmed**.

The model explains 14.6% of the variance in Corporate Financial Sustainability, which indicates an acceptable explanatory power. The Q-square value of 0.107 suggests that the model has an acceptable predictive relevance.

4.3 Findings Summary

The final stage of implementing PLS-SEM is to evaluate the results and draw conclusions. The goal of this part was to explain the findings in light of the current research. The study's empirical goal is to determine the influence of Corporate Social Responsibility and its dimensions (ES, G, and ESG) on Corporate Financial Sustainability and its dimensions (ROA and ROE), by moderating Financial Distress. To obtain solutions to research questions, a list of hypotheses is created by reviewing the relevant literature on the

mentioned variables. The data were analysed and hypotheses tested using SPSS and SmartPLS. The summary of the hypotheses was reported in table 4.13.

This study investigated the relationships between Corporate Social Responsibility (CSR) dimensions, Financial Distress (FD), and various measures of financial performance. This study reveals a nuanced relationship between CSR practices and financial performance. While environmental and social initiatives generally show positive associations with financial metrics, governance and overall ESG scores initially display negative relationships. However, the consistent positive moderation effect of financial distress indicates that CSR practices become increasingly beneficial as companies face financial challenges. The analysis yielded several key findings:

Table 4.13: Hypothesis testing summary

H	Hypothesis	Remark	f-square	Effect Size	R-square	Q-square
H1.1	Environmental and Social Score -> ROA	Accepted	0.054	Small	0.463	0.398
H2.1	ES*FD -> ROA	Accepted	0.804	Large		
H1.2	Governance Score -> ROA	Rejected	0.037	Small	0.429	0.341
H2.2	G*FD -> ROA	Accepted	0.721	Large		
H1.3	Total ESG Score -> ROA	Accepted	0.031	Small	0.432	0.349
H2.3	ESG*FD -> ROA	Accepted	0.74	Large		
H3.1	Environmental and Social Score -> ROE	Accepted	0.057	Small	0.066	0.057
H4.1	ES*FD -> ROE	Rejected	0.013	No Effect		
H3.2	Governance Score -> ROE	Rejected	0.011	No Effect	0.019	0.004
H4.2	G*FD -> ROE	Rejected	0.008	No Effect		
H3.3	Total ESG Score -> ROE	Accepted	0.023	Small	0.03	0.016
H4.3	ESG*FD -> ROE	Rejected	0.009	No Effect		
H5.1	Environmental and Social Score -> Corporate Financial Sustainability	Accepted	0.074	Small	0.194	0.164
H6.1	ES*FD -> Corporate Financial Sustainability	Accepted	0.165	Moderate		

H5.2	Governance Score -> Corporate Financial Sustainability	Accepted	0.023	Small	0.135	0.094
H6.2	G*FD -> Corporate Financial Sustainability	Accepted	0.136	Small		
H5.3	Total ESG Score -> Corporate Financial Sustainability	Accepted	0.033	Small	0.146	0.107
H6.3	ESG*FD -> Corporate Financial Sustainability	Accepted	0.143	Small		
<i>Source:</i> Researcher's Development						

1. Environmental and Social (ES) Performance:

- ES scores showed a significant positive direct effect on Return on Assets (ROA) ($\beta=0.170$, $p=0.010$), Return on Equity (ROE) ($\beta=0.232$, $p=0.000$), and Corporate Financial Sustainability (CFS) ($\beta=0.244$, $p=0.000$).
- The interaction between ES and FD was significant for ROA ($\beta=0.657$, $p=0.000$) and CFS ($\beta=0.364$, $p=0.001$), but not for ROE ($p=0.086$).
- These results suggest that strong ES practices generally contribute positively to financial performance, with this relationship being amplified under conditions of financial distress for ROA and CFS.

2. Governance (G) Performance:

- Governance scores showed a significant negative direct effect on CFS ($\beta=-0.141$, $p=0.039$), but no significant direct effect on ROA ($p=0.082$) or ROE ($p=0.110$).
- The interaction between G and FD was significant for ROA ($\beta=0.642$, $p=0.000$) and CFS ($\beta=0.343$, $p=0.004$), but not for ROE ($p=0.134$).
- This indicates that while stronger governance might slightly negatively impact financial sustainability, its effect becomes positive under financial distress, particularly for ROA and CFS.

3. Total ESG Performance:

- Total ESG scores showed significant negative direct effects on ROA ($\beta=-0.133$, $p=0.031$), ROE ($\beta=-0.149$, $p=0.019$), and CFS ($\beta=-0.167$, $p=0.008$).
- The interaction between ESG and FD was significant for ROA ($\beta=0.649$, $p=0.000$) and CFS ($\beta=0.350$, $p=0.003$), but not for ROE ($p=0.130$).

These results suggest that while overall ESG performance might have a slight negative impact on financial metrics, this relationship is significantly moderated by financial

distress, turning positive for ROA and CFS under high distress conditions.

4. Model Explanatory Power:

- The models explaining ROA had the highest explanatory power (R^2 ranging from 0.429 to 0.463) in hypotheses H(1&2).1, H(1&2).2, H(1&2).3 as in figure 4.23, followed by those for CFS (R^2 ranging from 0.135 to 0.194) in hypotheses H(1&2).7, H(1&2).8, H(1&2).9.
- Models for ROE showed relatively low explanatory power (R^2 ranging from 0.019 to 0.066).

5. Moderation Effects:

- Financial Distress consistently played a significant moderating role in the relationships between CSR dimensions and both ROA and CFS, but not for ROE.

The positive moderation effects suggest that CSR initiatives become more valuable or impactful on financial performance as companies face higher levels of financial distress.

5.1 Conclusion

This study provides critical insights into the intricate relationship between Corporate Social Responsibility (CSR) and Corporate Financial Sustainability (CFS), particularly under conditions of financial distress. Using a deductive, quantitative research approach, this thesis analyzed data from companies listed on the S&P/EGX ESG Index from 2019 to 2023, a period marked by the COVID-19 pandemic and the Russian Ukrainian war. These global crises offered a unique context for assessing the resilience of CSR practices and their role in mitigating financial distress, an area with limited empirical research, particularly in emerging markets like Egypt. The findings confirm that CSR, when strategically implemented, positively contributes to financial sustainability. Environmental and Social (ES) dimensions emerged as particularly significant drivers of financial performance, demonstrating their capacity to enhance Return on Assets (ROA) and Return on Equity (ROE). This aligns with the Triple Bottom Line (TBL) framework, which emphasizes the importance of balancing environmental, social, and financial objectives for long-term corporate sustainability (Pislaru, 2019). Firms that prioritize ES practices benefit from improved operational efficiency, stronger stakeholder relationships, and enhanced reputational capital, which collectively contribute to sustained financial outcomes (Eldomiaty, Soliman, Fikri, & Anis, 2016). Conversely, Governance (G) scores, while often showing weaker direct impacts on financial metrics, play a critical role in mitigating risk during periods of financial instability. The study's results corroborate findings by (Boubaker, Cellier, Manita, & Saeed, 2020) and Wu (2020),

which highlight governance's role in reducing financial default risks, enhancing creditworthiness, and ensuring stability during economic downturns. The inclusion of Financial Distress (FD) as a moderating variable adds a novel dimension to the analysis, demonstrating how firms can leverage CSR to manage financial challenges more effectively. Specifically, firms with higher CSR engagement, particularly in state-owned enterprises (SOEs), were better equipped to navigate financial constraints and maintain stakeholder confidence.

Despite the overall positive effects of CSR on financial performance, the study also revealed important nuances. Aggregated ESG scores, while positively linked to CFS in the long term, sometimes displayed initial negative effects on financial indicators such as ROA and ROE. This finding aligns with (Nollet, Filis, & Mitrokostas, 2016), who observed that the benefits of CSR materialize after surpassing certain thresholds of investment and commitment. Additionally, variations in CSR impacts between manufacturing and non-manufacturing sectors underscore the importance of sector-specific strategies, as different industries face unique regulatory pressures, stakeholder expectations, and operational challenges.

5.2 Recommendation

The results of this research have practical implications for corporate managers, policymakers, and investors. For corporate managers, aligning CSR activities with strategic goals is critical to achieving financial sustainability while fulfilling ethical obligations. As (McLaren & Struwig, 2019) highlights, effective allocation of constrained financial resources is vital, particularly during periods of economic uncertainty. Firms should prioritize CSR initiatives that yield measurable returns in stakeholder trust, reputational enhancement, and operational efficiency, as these directly impact long-term sustainability.

For policymakers, this study underscores the need to formalize CSR practices through supportive public policies and incentives. Proactive policies can encourage firms to adopt CSR as a strategic tool for navigating financial instability while contributing to broader societal and environmental objectives. Policymakers can also use the findings to develop industry-specific guidelines, addressing the diverse challenges faced by manufacturing and non-manufacturing sectors.

For investors, the research provides evidence that CSR is not merely a cost but a strategic investment that enhances a firm's resilience and value creation. Signaling theory suggests that robust CSR practices signal stability and trustworthiness, influencing investor

confidence and financial market outcomes. Moreover, during periods of financial distress, CSR-oriented firms have demonstrated better risk management and creditworthiness, making them more attractive to investors seeking long-term value.

References:

- Agostini, M. (2018). Agostini, M. Corporate Financial Distress: A Roadmap of the Academic Literature Concerning its Definition and Tools of Evaluation. *Springer: Berlin/Heidelberg, Germany, 2018*, pp. 5–47.
- Amani, F., & Fadlalla, A. (2015). Predictability of Firm Financial Sustainability Using Artificial Neural Networks: . *The Case of Qatar Exchange*, https://doi.org/10.1007/978-3-319-08422-0_37.
- Arafa, I., & el Hawary, E. (2020). Measuring and Evaluating the Corporate Social Responsibility Reporting by the Banking Sector in Egypt.
- Awa, H., Etim, W., & Ogbonda, E. (2024). Stakeholders, Stakeholder Theory and Corporate Social Responsibility (CSR). *International journal of corporate social responsibility*, 9(1). doi: <https://doi.org/10.1186/s40991-024-00094-y>.
- Aydogmus, M., Gulay, G., & Ergun, K. (2022). Impact Of Esg Performance On Firm Value And Profitability. *Borsa Istanbul Review*, [online] 22(2), pp.S119–S127. doi: <https://doi.org/10.1016/j.bir.2022.11.006>.
- Bag, S., & Omrane, A. (2022). Corporate Social Responsibility and Its Overall Effects on Financial Performance: Empirical Evidence from Indian Companies. *Journal of African Business*, 23(1), pp.1–17. doi: <https://doi.org/10.1080/15228916.2020.1826884>.
- Boubaker, S., Cellier, A., Manita, R., & Saeed, A. (2020). Does corporate social responsibility reduce financial distress risk? *Economic Modelling*, 91. doi: <https://doi.org/10.1016/j.econmod.2020.05.012>.
- Cavaco, S., & Crifo, P. (2014). CSR and financial performance: complementarity between environmental, social and business behaviours. *Applied Economics*, 46(27), pp.3323–3338. doi: <https://doi.org/10.1080/00036846.2014.927572>.
- Coelho, R., Jayantilal, S., & Ferreira, J. (2023). The impact of social responsibility on corporate financial performance: A systematic literature review. *Corporate Social Responsibility and Environmental Management*, [online] 30(4), pp.1535–1560. doi:<https://doi.org/10.1002/csr.2446>.
- Darrag, M., & Crowther, D. (2016). Reflections on CSR: the case of Egypt. *Society and Business Review*, 12(1), pp.94–116. doi: <https://doi.org/10.1108/sbr-01-2016-0010>.
- El Kayaly, D. (2014). Corporate Social Responsibility supporting SMEs: Lessons Learned from Egypt, No 2014/25, Working Papers. *Maastricht School of Management*,

- <https://EconPapers.repec.org/RePEc:msm:wpaper:2014/25>.
- Eldomiaty, T., Soliman, A., Fikri, A., & Anis, M. (2016). The financial aspects of the Corporate Responsibility Index in Egypt. *International Journal of Social Economics*, 43(3), pp.284–307. doi: <https://doi.org/10.1108/ijse-06-2014-0118>.
- Feng, Y., Akram, R., Hieu, V., & Tien, N. (2021). The impact of corporate social responsibility on the sustainable financial performance of Italian firms: mediating role of firm reputation. *Economic Research-Ekonomska Istraživanja*, [online] 35(1), pp.1–19. doi: <https://doi.org/10.1080/1331677x.2021.2017318>.
- Fourati, Y., & Dammak, M. (2021). Corporate social responsibility and financial performance: International evidence of the mediating role of reputation. *Corporate Social Responsibility and Environmental Management*, 28(6). doi:<https://doi.org/10.1002/csr.2143>.
- Fu, T., & Li, J. (2023). An Empirical Analysis of the Impact of ESG on Financial performance: the Moderating Role of Digital Transformation. *ProQuest*, [online] 11. Doi: <https://doi.org/10.3389/fenvs.2023.1256052>.
- Gleißner, W., Günther, T., & Walkshäusl, C. (2022). Financial sustainability: measurement and empirical evidence. *Journal of Business Economics*, doi: <https://doi.org/10.1007/s11573-022-01081-0>.
- Iazzolino, G., Bruni, M., Veltri, S., Morea, D., & Baldissarro, G. (2023). The impact of ESG factors on financial efficiency: An empirical analysis for the selection of sustainable firm portfolios. *Corporate Social Responsibility and Environmental Management*, 30(4). Doi: <https://doi.org/10.1002/csr.2463>.
- Ikpesu, F., Adegbite, E., & Amaeshi, K. (2020). Financial distress and corporate social responsibility: insights from an emerging market. *Corporate Governance. The International Journal of Business in Society*, 20(6), pp.1121–1145. doi: <https://doi.org/10.1108/cg-05-2020-0197>.
- Jha, M., & Rangarajan, K. (2020). Analysis of corporate sustainability performance and corporate financial performance causal linkage in the Indian context. *Asian Journal of Sustainability and Social Responsibility*, 5(1). doi: <https://doi.org/10.1186/s41180-020-00038-z>.
- Jyoti, J., & Khanna, A. (2021). The Impact of Environmental, Social and Governance Factors on the Financial Performance of Firms. *Research Journal of Social Sciences & Economics Review*, 2(3), pp.81–97. doi: <https://doi.org/10.36923/rjsser.v2i3.113>.
- Kakati, S., & Roy, A. (2021). Financial sustainability: An annotated bibliography. *Economics and Business Review*, 7(3), pp.35–60. doi: <https://doi.org/10.18559/ebv.2021.3.4>.

- Ma, C., Chishti, M., Durrani, M., Bashir, R., Safdar, S., & Hussain, R. (2023). The Corporate Social Responsibility and Its Impact on Financial Performance: A Case of Developing Countries. *Sustainability*, [online] 15(4), p.3724. doi: <https://doi.org/10.3390/su15043724>.
- McLaren, J., & Struwig, F. (2019). Financial Ratios as Indicators of Financial Sustainability at a South African University. *Journal of Contemporary Management*, 16(2), pp.68–93. doi: <https://doi.org/10.35683/jcm19030.0027>.
- Muraleetharan, P., Velnamby, T., & Nimalathasan, B. (2020). The Effect of Corporate Social Responsibility on Profitability: A Study of Bank, Finance and Insurance Companies in Sri Lanka. *International Journal of Accounting and Financial Reporting*, 10(4), p.70. doi: <https://doi.org/10.5296/ijaf.v10i4.18127>.
- Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, 52(B), pp.400–407. doi: <https://doi.org/10.1016/j.econmod.2015.09.019>.
- Okafor, C., Adeyemi, O., & Adeniji, J. (2021). The Impact of Corporate Social Responsibility on Corporate Financial Performance of Technology Companies. *Available at SSRN*, <https://ssrn.com/abstract=3937698>.
- Pislaru, M. (2019). The Triple Bottom Line (TBL): An Approach to Corporate Sustainability, In: Leal Filho, W., Azul, A.M., Brandli, L., Özuyar, P.G., Wall, T. (eds) Industry, Innovation and Infrastructure. *Encyclopedia of the UN Sustainable Development Goals*. Springer, Cham. https://doi.org/10.1007/978-3-319-71065-5_137-1.
- Qazi, H., & Nobanee, H. (2020). Strategies for Financial Sustainability.
- Qiu, Y., Shaukat, A., & Tharyan, R. (2020). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review* (2014), doi: <https://10.1016/j.bar.2014.10.007>.
- Rustam, A. (2022). Financial Sustainability Ratio and Aspects That Affect It. *Jurnal Akuntansi*, 26(1), p.144. doi: <https://doi.org/10.24912/ja.v26i1.822>.
- Said, M., Annuar, H., & Hamdan, H. (2019). An investigation into the financial sustainability of Islamic Saving, Credit Cooperative Society (SACCOS) in Tanzania. *International Journal of Ethics and Systems*, 35(2), pp.242–259. doi: <https://doi.org/10.1108/ijoes-11-2018-0159>.
- Saunders, M., Lewis, P., & Thornhill, A. (2023). *Research Methods for Business Students*. 9th ed. Harlow. Pearson.
- Semaw Henock, M. (2019). Financial sustainability and outreach performance of saving and credit cooperatives: The case of Eastern Ethiopia. *Asia Pacific Management Review*, 24(1), pp.1–9. doi: <https://doi.org/10.1016/j.apmr.v.2018.08.001>.

- Sharma, D., Chakraborty, S., Rao, A. A., & Lobo, L. S. (2023). The Relationship of Corporate Social Responsibility and Firm Performance: A Bibliometric Overview. *The Relationship of Corporate Social Responsibility and Firm Performance: A Bib. The Relationship of Corporate Social Responsibility and Firm Performance: A Bibliometric Overview*, 13(1), p.215824402311580-215824402311580. doi: <https://doi.org/10.1177/21582440231158021>.
- Shobhwani, K., & Lodha, S. (2023). Impact of ESG Risk Scores on Firm Performance: An Empirical Analysis of NSE-100 Companies. *Asia-Pacific Journal of Management Research and Innovation*, 19(1), pp.2319510X2311709–2319510X2311709. doi: <https://doi.org/10.1177/2319510x231170910>.
- Soppe, A. (2004). Sustainable Corporate Finance. *Journal of Business Ethics - J BUS ETHICS*, 53, 213-224. <http://doi.org/10.1023/B:BUSI.0000039410.18373.12>.
- Thakor, A. V. (2014). Financial intermediation, corporate finance, and the theory of financial distress. *Journal of Banking & Finance*, 45, 21-30. doi: <https://doi.org/10.1016/j.jbankfin.2013.09.026>.
- Wesa, E. (2018). The Pecking Order Theory Revisited. *Journal of Advanced Research in Economics and Management*, 3(1), pp.10–16. doi: <https://doi.org/10.19045/jarem.2018.1.302>.
- Witek-Crabb, A. (2018). CSR Versus Business Financial Sustainability of Polish Enterprises. *CSR, sustainability, ethics & governance*, pp.43–58. doi: <https://doi.org/10.1007/978-3-030-00440-8>.
- Wu, L., Shao, Z., Yang, C., Ding, T., & Zhang, W. (2020). The Impact of CSR and Financial Distress on Financial Performance—Evidence from Chinese Listed Companies of the Manufacturing Industry. *Sustainability*, 12(17), p.6799. <https://doi.org/10.3390/su12176799>.
- Ye, N., Kueh, T.-B., Hou, L., Liu, Y., & Yu, H. (2020). A bibliometric analysis of corporate social responsibility in sustainable development. *Journal of Cleaner Production*, [online] 272(122679), p.122679. doi: <https://doi.org/10.1016/j.jclepro.2020.122679>.
- Zabolotnyy, & Wasilewski. (2019). The Concept of Financial Sustainability Measurement: A Case of Food Companies from Northern Europe. *Sustainability*, 11(18), p.5139. doi: <https://doi.org/10.3390/su11185139>.