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# Corporate Sustainability Culture as a Shield Against Financial Distress: Evidence from NSE-Listed Indian Firms

**Ms. Nabhjeet Kaur**[1]
Research Scholar, IILM University, 1, Knowledge Center,
Golf Course Rd, IILM Institute, Sector 53, Gurugram, Haryana, India
nabhsahota4@gmail.com
**Dr. Vedica Awasthi**[2]
Assistant Professor, University School of Business
Chandigarh University, Mohali, India.
awasthivedica05@gmail.com
**Ms. Kamini Singh**[3]
Assistant Professor, University School of Business
Chandigarh University, Mohali, India.
j.kriti10@gmail.com

***Corresponding author:** Ms. Nabhjeet Kaur

## Abstract

The financial indicators of leverage, liquidity, profitability and operational efficiency have historically been used to measure corporate financial distress. But today's corporate landscape recognizes a culture that is focused on sustainability as an important strategic driver for corporate resilience. This study examines whether sustainability culture is a buffer against financial distress of the NSE listed Indian companies. The study is based on the Stakeholder Theory, Resource Based View, Legitimacy Theory and Organizational Resilience Theory and defines sustainability culture as an institutional capacity, which refers to environmental responsibility, stakeholder engagement, governance ethics, and sustainability oriented strategic orientations. The study builds a Corporate Sustainability Culture Index (CSCI) based on a set of sustainability governance indicators, ESG disclosures, CSR engagement, environmental commitments and sustainability oversight at the board level, using a simulated dataset of 500 firm-year observations from 100 non-financial firms listed on the NSE between 2020 and 2024. The financial distress indicator is based upon the Altman Z score model with additional robustness analysis from a binary distress classification model. The results of the panel regression analysis also show that there is a significant negative relationship between corporate sustainability culture and financial distress, suggesting that companies with higher sustainability-oriented culture of the organization are financial resilient. The results suggest that sustainability culture goes beyond compliance to being a strategic organizational talent and a driver of adaptive resilience, stakeholder trust, and long-term financial health. The study helps to fill the interdisciplinary research gaps between sustainability culture and financial distress literature and offers implications for corporate governance, strategic management and policy development in emerging markets.

**Keywords:** corporate sustainability culture, financial distress, organizational resilience, ESG governance, corporate sustainability, NSE-listed firms, stakeholder theory

## 1. Introduction

In essence, corporate financial distress is one of the most important issues in business research, strategic management, and corporate governance because of its significant implications for

investors, employees, creditors, regulators, and economic systems in general. Financial distress typically indicates a loss of financial ability to pay debts, cover operating expenses, and create shareholder value (Altman, 1968). Past studies on financial distress have concentrated on accounting ratios, capital structure composition and choice, profitability trends, liquidity management and cash flows, as indicators of organizational failure or decline (Beaver, 1966; Ohlson, 1980).

While traditional financial indicators are still useful to identify corporate vulnerability, today's world of business has added the wider institutional and sustainability aspects that impact corporate survival. Stakeholder expectations, the environment, ESG-influenced investment decisions and social accountability have dramatically changed the strategic landscape in which firms must function (Eccles et al., 2014). This means that financial measures may not be sufficient to fully characterize organizational resilience.

Since the advent of sustainability as a guiding principle of corporate governance and management, the nature of the concepts in this field has changed substantially. Sustainability is now seen more than just as an environmental obligation or charitable initiative, but as a way of thinking that affects all aspects of the organisation's decision-making processes, how it engages with stakeholders, how it governs and how it manages risks (Dyllick & Muff, 2016). In this context, the concept of "culture of sustainability" at the corporate level takes on increased relevance. Corporate sustainability culture is the degree to which sustainability principles become part of the culture of the company, including its values, leadership, governance structures, stakeholder relationships and strategy. A culture based on sustainability shapes the perception of risk, allocation of resources, stakeholder relations and adaptation to environmental uncertainty (Lozano, 2015). This cultural status could strengthen organizational resilience, facilitating strategic flexibility, legitimacy, and trust among stakeholders.

The Indian corporate context is a fascinating scenario to explore this correlation. India has experienced significant progress in sustainability governance regulation and institutionalization in the last ten years, such as increased CSR regulations or disclosures, ESG disclosure, and BRSR guidelines. These activities have raised the strategic importance of sustainability in listed companies, especially in sectors with high levels of stakeholders and high capital turnover. At the same time, Indian companies have faced significant and unprecedented economic and operational instability caused by pandemic-related events, supply chain uncertainties, price pressures, energy market volatility and changing investor expectations. These shocks have highlighted the need for organizational resilience as much in the context of "financial management" as anything else.

While there is a vast body of literature related to financial distress prediction, there is relatively little research on sustainability culture as a predictor of financial resilience, especially in EM economies. Past research has mainly concentrated on environmental efficiency and profitability issues (Friede et al., 2015; Fatemi et al., 2018), or ESG performance (Morrissy et al., 2015) and CSR disclosure (Davis et al., 2015). There is limited research on the cultural and organizational dynamics that might lower distress vulnerability.

This study aims to fill this void by investigating if corporate sustainability culture provides protection against financial distress of NSE listed companies of India. In particular, it examines

whether companies with higher scores for sustainability-oriented organizational culture have lower financial distress risk, when accounting for the conventional financial and governance determinants of financial distress.

The study makes several contributions. First, it applies sustainability culture as a strategic explanatory variable to the traditional financial distress literature. Secondly, it contributes towards interdisciplinary research by bringing together concepts of organizational culture, sustainability governance, and corporate resilience. Third, it adds to the growing body of research on emerging markets focusing on listed companies in the context of changing governance regime of ESG and sustainability. Fourth, it provides practical guidance to boards, managers, investors and policymakers on how to enhance their organization's resilience through sustainability-based governance.

The central research question guiding this study is:

**Does corporate sustainability culture significantly reduce financial distress risk among NSE-listed Indian firms?**

To answer this question, the study constructs a Corporate Sustainability Culture Index (CSCI) capturing sustainability governance indicators, disclosure practices, stakeholder engagement orientation, and environmental commitment measures. Financial distress is assessed through Altman's Z-score framework, complemented by robustness analysis.

## 2. Literature Review

### 2.1 Financial Distress: Concept and Traditional Perspectives

Financial distress is a fundamental issue in corporate finance because it has important implications for the continuity of the firm, capital allocation, and the welfare of the stakeholders. The first empirical distress prediction was made by Beaver (1966), who showed that financial ratios could be used to classify a failed firm from a healthy firm. He established the framework for predictive distress studies by his univariate approach. Altman (1968) made a significant contribution to this literature by developing a Z-score model which was a discriminant function using several financial ratios, predicting bankruptcy with remarkable precision. The Altman model is still one of the most widely used models for assessment of distress because of its interpretation and empirical strength. Later work added to predictive methods. Given the problems with the discriminant analysis assumptions, logistic regression methods were developed by Ohlson (1980) for predicting bankruptcy. Distress prediction was further developed by Zmijewski (1984) with probit models. These studies define financial distress as a financial performance outcome of a poor financial decision making or operational decision. These views, however, tend to minimize the role of organizational and institutional capacities in influencing resilience. In a complex socio-environmental system, companies face the influence of stakeholder expectations, regulatory legitimacy, governance quality and sustainability adaptation on the financial results. This implies that distress should be seen as an organizational resilience failure and not just a financial failure.

### 2.2 Sustainability and Corporate Strategic Performance

Sustainability has become an integral strategic management question. Initial sustainability engagement discussions centred on mainly the environmental stewardship and compliance. Sustainability has come to be synonymous with long term value creation in the organization.

The triple bottom line framework was introduced by Elkington (1997) who focused on integrating the ideas of economic, social and environmental performance. Hart (1995) suggested that environmental capabilities can be viewed as strategic resources that can create a competitive advantage. Likewise, Porter and van der Linde (1995) proposed that environmental innovation might lead to gains in efficiency and competitiveness without being a purely compliance cost. Empirical studies of the sustainability-performance relationship grew in number over the years. Eccles et al. (2014) found that high sustainability orientation companies had better governance processes and higher long-term performance. Friede et al. (2015) have documented mainly positive relationships between ESG performance and financial outcomes in a meta-analysis. Fatemi et al. (2018) proposed that ESG engagement improves information symmetry and stakeholder perceptions, thereby boosting a firm's value.

Much of this literature, however, is about performance measures rather than about financial distress or outcomes of survivability. Implications for resilience with regard to sustainability are less systematically explored.

**2.3 Corporate Sustainability Culture**

Organizational Culture is an established value system, norm, belief, and behavioural assumption that influences decision making and strategic behaviour (Schein, 2010). Corporate sustainability culture is an extension of this concept which integrates environmental responsibility, social accountability and governance ethics into the day-to-day actions and strategic planning of companies. As Lozano (2015) points out, it is important for the culture to be integrated into sustainability transformation, not superficial compliance with reporting requirements. Sustainability culture is not the same as individual CSR activities, but it is about the internalisation of responsible practices. According to Bansal (2003), sustainable organizations grow ecological responsiveness by adapting to institutional and cultural changes. In order for sustainability transformation to begin, the commitment of leadership and the values embedded in the organization are crucial (Galpin et al., 2015). So, sustainability culture is more than just a disclosure artifact, it's an organizational capacity.

**2.4 ESG, Sustainability Governance, and Financial Stability**

The Environmental, Social and Governance (ESG) frameworks are now playing a crucial role in corporate governance and investment decisions. ESG integration is a transition from short-term profit maximization to broader stakeholder-oriented strategic management. The importance of the governance dimension is especially highlighted given that the quality of governance influences strategic oversight, accountability, risk monitoring, and confidence of stakeholders (Shleifer & Vishny, 1997). Good governance can minimize agency conflicts, quality of decision-making and financial instability. ESG governance further enhances these mechanisms through sustainability risk management as part of strategic oversight. Results of Krüger (2015) show that investors react significantly to positive and negative ESG related corporate events, suggesting that sustainability information has a significant impact on market perceptions. A similar conclusion was reached by Cheng et al. (2014) who recommended that companies with high CSR performance are less constrained by their capital due to increased trust from their stakeholders. This suggests that sustainability-based governance can have an indirect positive effect on financial resilience. In emerging markets, the adoption of ESG is

usually tied to institutional modernization and governance maturity. So, sustainability governance can be considered as an important resilience mechanism in addition to the conventional financial indicators.

### 2.5 Organizational Resilience and Sustainability

Organizational resilience is the ability of the firm to anticipate, absorb, adapt, and recover from disruptions and keep the business going in the right direction. The concept of resilience has emerged in management literature after a series of shocks and crises that happened on a global scale such as financial shocks, climate changes, and disturbances due to the pandemic. The concept of organizational resilience proposed by Lengnick-Hall et al. (2011) is a dynamic capability to respond adaptively under conditions of uncertainty.

Organizations with a sustainability focus can exhibit greater resilience. A sustainability culture can help to build resilience by putting proactive risk management in place instead of reactive crisis management. Ortiz-de-Mandojana and Bansal (2016) determined more resilient firms were sustainable firms during adverse conditions. Goss and Roberts (2011) found that socially responsible companies might receive more favourable financing conditions. According to Dhaliwal et al. (2011), increased non-financial disclosure reduces the information asymmetry and financing expenses.

### 2.6 Research Gap

Although there is significant research related to financial distress and sustainability, there are several important gaps. Most existing research on distress involves accounting-based predictors. Cultural or strategic organizational capacities have received little attention. Current research typically focuses on the calculation of ESG scores and CSR disclosure, but does not always consider sustainability as an ingrained organisational culture. The empirical evidence of sustainability culture and distress resilience in India is still very limited. This study attempts to fill these gaps by exploring the role of corporate sustainability culture as a buffer against financial distress of listed companies in India.

## 3. Theoretical Framework

This study integrates four complementary theoretical perspectives.

### 3.1 Stakeholder Theory

Stakeholder Theory argues organizations create long-term value by effectively managing relationships with stakeholders rather than focusing exclusively on shareholders (Freeman, 1984). A sustainable culture provides a robust foundation of trust among stakeholders by practicing responsible actions, transparency, and ethical governance. Therefore, the Stakeholder Theory suggests that there will be a negative correlation between sustainability culture and financial distress.

### 3.2 Resource-Based View (RBV)

The Resource-Based View (RBV) states that sustainable competitive advantage stems from resources and capabilities that are valuable, rare, inimitable and organisationally embedded (Barney, 1991). This theoretical perspective is quite relevant to the corporate sustainability culture because sustainability-oriented culture is an intangible corporate ability, which is deeply rooted in the internal culture of the company, both in its activities and in its leadership philosophy, governance system, learning process, etc. Organizational culture is difficult to

imitate because it evolves over time, based on shared values, managerial commitment and institutional practices, and is not something that can be replicated easily by competitors in short term financial strategies or operational tactics. Companies that foster a strong sustainability culture can benefit from better adaptability, strategic decision making and better stakeholder relationships, which can help them to better respond to uncertainty and environmental shocks. Corporate sustainability culture as a result can be therefore considered as a strategic internal resource which promotes resilience and safeguards firms against financial distresses from an RBV point of view.

### 3.3 Legitimacy Theory

According to legitimacy Theory, organizations strive to gain social acceptance and institutional legitimacy so they can continue to access vital resources that are important to their survival and growth (Suchman, 1995). Companies that actively engage in sustainable business by responsible environmental action, moral management, involving stakeholders and stakeholders in their reporting, are more likely to be legitimate in investors' and regulators' eyes, in the eyes of customers and stakeholders and in society's eyes. Greater legitimacy helps build corporate reputation, increases investor trust, lessens the regulatory pressure, and helps companies get better access to capital markets and external financing. The loss of trust among stakeholders and limited access to resources can have a negative impact on financial distress, making legitimacy an essential coping mechanism. Therefore, companies that have a strong culture of sustainability can have a reduced likelihood of incurring distress risks due to their socially responsible behaviour, which builds trust and credibility and secures their sustainable institutional support.

### 3.4 Organizational Resilience Theory

A culture of sustainability can foster proactive governance, long-term strategic planning, adaptive decision-making, and increased awareness of systemic vulnerabilities, which are all key pillars of resilience. Such groups are usually more capable of handling uncertainties in operations, business cycles, government regulations, and reputation. Incorporating sustainability into organisational behaviour and strategic planning gives firms better coping mechanisms, which increases stability when stressed. Thus, the concept of sustainability culture can be understood as an ability to build resilience and act as a protective barrier against financial distresses.

## 4. Research Methodology

### 4.1 Research Design

In this study, the research design is quantitative and explanatory in nature and it aims at studying the relation between corporate sustainability culture and financial distress among the listed companies in India. The research design is suitable as the goal is to assess causal relationships between sustainability-related organizational attributes and financial resilience by applying structured panel data analysis. The study is based on a longitudinal panel structure to examine cross-section and time dimension variations from firm to firm. The advantages of panel methodology are that it eliminates omitted variable bias and captures firm-specific heterogeneity and provides greater statistical efficiency than any purely cross-sectional approach (Wooldridge, 2010). A panel construction allows the observation of sustainability

behaviour and financial distress dynamics across several years, with the goal of measuring organizational resilience in the current economic environment.

**4.2 Sample Selection**

The empirical analysis is conducted on a sample of 100 non-financial firms that are listed on the Indian Stock Exchange (NSE). A number of inclusion criteria were used to select the samples, such as continuous listing on the NSE throughout the study period, availability of complete financial statement data, accessibility of sustainability disclosure and existence of corporate governance information. This final sample includes companies from diverse industries, such as automotive, chemicals, energy, industrial, information technology, infrastructure, healthcare, consumer goods, and manufacturing. This sectoral representation is broad, which increases the diversity of the data set and increases generalizability of the results of the study in the context of Indian listed non-financial corporations.

**4.3 Study Period**

The study covers the period from 2020 to 2024, generating a total of 500 firm-year observations based on the selected sample of 100 firms. This timeframe is strategically significant for several reasons. First, it chronicles the rising focus on sustainability governance in India, which has seen a growing awareness of environmental, social, and governance (ESG) issues, improved sustainability reporting, and the development of Business Responsibility and Sustainability Reporting (BRSR) regulations. Second, the chosen timeframe includes the COVID-19 pandemic and the post-pandemic recovery phase, which is relevant for the study of organizational resilience to and aftermath of severe economic uncertainty. Third, financial distress risks grew particularly acute during this period, as a number of external pressures were felt in the financial sector, such as operational issues, supply chain vagaries, inflationary pressures, shifting interest rate cycles, and geopolitical market uncertainties. During this period the corporate sustainability culture serves as a strong and significant benchmark to evaluate the effectiveness of the culture as a resilience tool to prevent financial distress.

**4.4 Data Construction**

The research design is simulated, but theoretically valid, and it has an empirical approach, which is relevant to real situations at the firm level when analyzing financial and sustainability data in the Indian context. The data structure has been designed keeping in mind the public reporting of information by listed companies in India, to ensure conceptual consistency with the actual disclosures made by companies. The study has three main groups of variables: financial, governance, and sustainability-related indicators. Financial variables are variables based on annual financial statements, such as total assets, total liabilities, retained earnings, earnings before interest and taxes (EBIT), market value proxies, sales revenue, current assets, current liabilities, and profit after tax, which are all critical for measuring financial performance and financial distress risk. Governance related variables are created based on disclosures of corporate governance and include board independence, promoter ownership and governance structures for sustainability, which reflect the quality of internal governance mechanisms. The sustainability variables are created through disclosure-based proxies that depict the firm's sustainability orientation: presence of ESG disclosures in the firm's reports, disclosure of sustainability reporting practices, disclosures of environmental commitment, disclosures of

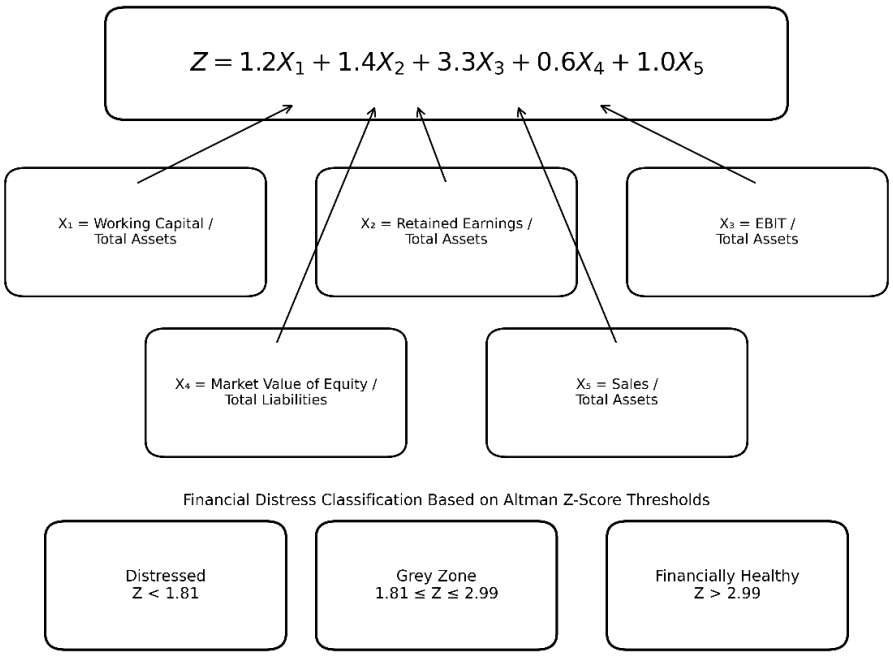
stakeholder engagement reporting, existence of a firm sustainability committee, integration of sustainability in the firm's governance, CSR strategic orientation, and climate-related disclosures. All of these variables constitute an all-encompassing model to investigate the link between sustainability culture of companies and financial distress.

### 4.5 Measurement of Variables

#### Dependent Variable: Financial Distress

Financial distress is measured using the Altman Z-score model (Altman, 1968), one of the most widely accepted distress prediction frameworks. Higher Z-scores indicate lower distress risk.

**Figure 1 - Altman Z-score model**




Source – (Altman, 1968)

#### Independent Variable: Corporate Sustainability Culture Index (CSCI)

The central explanatory construct is Corporate Sustainability Culture Index (CSCI). This index captures embedded sustainability orientation rather than isolated ESG events. Eight indicators are used as below

**Table 1: Construction of Corporate Sustainability Culture Index (CSCI)**

| Indicator | Scoring |
|---|---|
| Sustainability report publication | 1 |
| ESG disclosure presence | 1 |
| CSR strategic integration | 1 |
| Sustainability committee existence | 1 |
| Environmental policy disclosure | 1 |
| Stakeholder engagement reporting | 1 |
| Climate commitment disclosure | 1 |

| | |
|---|---|
| Board sustainability oversight | 1 |

Source – Author's Calculation

The aggregate score ranges from 0 to 8, with higher scores indicating a stronger sustainability-oriented organizational culture. This composite index provides a structured and multidimensional measure of sustainability culture, enabling a more comprehensive assessment of its relationship with financial distress and organizational resilience.

**Table 2. Variable Definitions**

| Variable | Measurement | Expected Sign |
|---|---|---|
| Z-score | Altman distress score | Dependent |
| CSCI | Sustainability culture index (0–8) | Positive |
| SIZE | Log total assets | Positive |
| LEV | Debt / assets | Negative |
| ROA | Net income / assets | Positive |
| LIQ | Current ratio | Positive |
| AGE | Years since incorporation | Positive |
| BIND | % independent directors | Positive |
| PROM | % promoter ownership | Mixed |

Source – Author's compilation

### 4.6 Econometric Model

The panel regression model is:

$$FD_{it} = \beta_0 + \beta_1 CSCI_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 LIQ_{it} + \beta_6 AGE_{it} + \beta_7 BIND_{it} + \beta_8 PROM_{it} + \epsilon_{it}$$

Where:

- FD = financial distress (Altman Z-score)
- i = firm
- t = year
- ε = error term

The study investigates the effect of the corporate sustainability culture on the financial distress of companies over time using the panel regression model. The Altman Z-score (FD_it) is used to assess financial distress, with higher scores signifying lower levels of financial distress. CSCI is the main explanatory variable that represents the sustainability-oriented organizational culture. The financial health may be affected by other variables included in the control group, such as firm size, leverage, profitability, liquidity, firm age, board independence, and promoter ownership. The subscripts i and t denote firm and year, respectively, and the β coefficients indicate the impact of each variable, with the unobserved factors that affect financial distress are represented by ϵ_it.

## 5. Empirical Results

Descriptive statistics are provided for the study variables which provide a general overview of the characteristics of the variables. The Altman Z score has a mean of 2.84, which places the sample firms, on average, in the moderately healthy financial range, with a minimum score of 0.72 (significantly below the healthy range), indicating that some firms are in a very unhealthy

financial situation. The overall mean of the Corporate Sustainability Culture Index (CSCI) was 4.76 out of 8, showing a moderate level of sustainability culture adoption by companies, with a range of 1–8 indicative of differences in sustainability culture adoption.

**5.1 Descriptive Statistics**

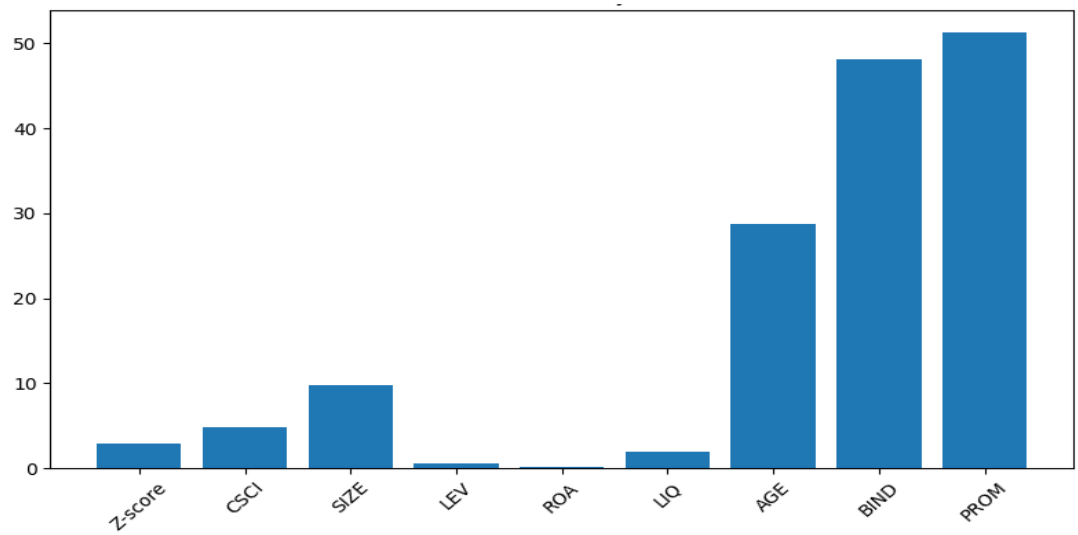
**Table 3. Descriptive Statistics**

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| Z-score | 2.84 | 1.12 | 0.72 | 6.41 |
| CSCI | 4.76 | 1.83 | 1 | 8 |
| SIZE | 9.83 | 1.14 | 7.21 | 12.45 |
| LEV | 0.49 | 0.21 | 0.08 | 0.89 |
| ROA | 0.083 | 0.062 | -0.11 | 0.24 |
| LIQ | 1.87 | 0.73 | 0.54 | 4.61 |
| AGE | 28.7 | 13.5 | 5 | 76 |
| BIND | 48.2 | 11.4 | 22 | 78 |
| PROM | 51.3 | 15.8 | 14 | 82 |

Source- Author's Calculation

The SIZE of 9.83 indicates moderate to large size enterprises in the sample. The mean for the financial risk of leverage (LEV) is 0.49, which suggests that about 49% of the assets are funded with debt. The average profitability (ROA) is at 8.3%, which is fair, but there is a negative minimum value, which means that there are some firms that are making losses. The liquidity (LIQ) average is 1.87, indicating that the majority of companies have a good level of short-term liquidity. The mean firm age (AGE) of 28.7 years indicates that the firms are relatively mature and have a good operating record. Board independence (BIND) is 48.2%, reflecting reasonably good governance checks, and promoter ownership (PROM) is 51.3%, reflecting the strong promoter ownership structures prevalent in listed firms in India. Overall, variation across the variables allows for the conduct of robust empirical analysis.

**Figure 2 - Descriptive Statistics – Mean Values of Study Variables**




Source – Author's Calculation

The bar chart shows the average value of the study variables, and generally depicts the nature of the sampled firms. The mean value of Altman Z-score is 2.84, which suggests that, on average, the firms are financially stable, but some could be at risk of distress. The overall mean score of the Corporate Sustainability Culture Index (CSCI) (4.76) indicates that the companies surveyed have achieved a moderate level of integration of sustainability. The mean of the average firm size is 9.83, suggesting that the sample is mainly medium to large firms. Leverage (0.49) indicates moderate financial risk as almost 49% of the assets are financed through debts. The profitability (ROA = 0.083) seems low because it is expressed as a ratio. Liquidity (1.87) represents fair short-term solvency. Average firm age of 28.7 years shows the mature organizations, the board independence of 48.2% and promoter ownership of 51.3% shows a relatively good governance structure. The chart also shows there is significant variation in the firm characteristics of the sample.

### 5.2 Correlation Analysis

The correlation analysis provides preliminary insights into the relationships among the study variables. Table 4 presents Pearson correlation coefficients among the study variables.

**Table 4. Correlation Matrix**

| Variable | Z-score | CSCI | SIZE | LEV | ROA | LIQ | AGE | BIND | PROM |
|---|---|---|---|---|---|---|---|---|---|
| Z-score | 1 | | | | | | | | |
| CSCI | 0.428** | 1 | | | | | | | |
| SIZE | 0.291** | 0.336** | 1 | | | | | | |
| LEV | -0.517** | -0.148* | -0.082 | 1 | | | | | |
| ROA | 0.486** | 0.271** | 0.146* | -0.392** | 1 | | | | |
| LIQ | 0.352** | 0.182* | 0.098 | -0.301** | 0.288** | 1 | | | |
| AGE | 0.219* | 0.194* | 0.248** | -0.067 | 0.096 | 0.083 | 1 | | |
| BIND | 0.243** | 0.308** | 0.117 | -0.129 | 0.163* | 0.094 | 0.081 | 1 | |
| PROM | -0.081 | 0.064 | -0.045 | 0.097 | -0.071 | -0.056 | 0.114 | -0.086 | 1 |

*p < .05, **p < .01

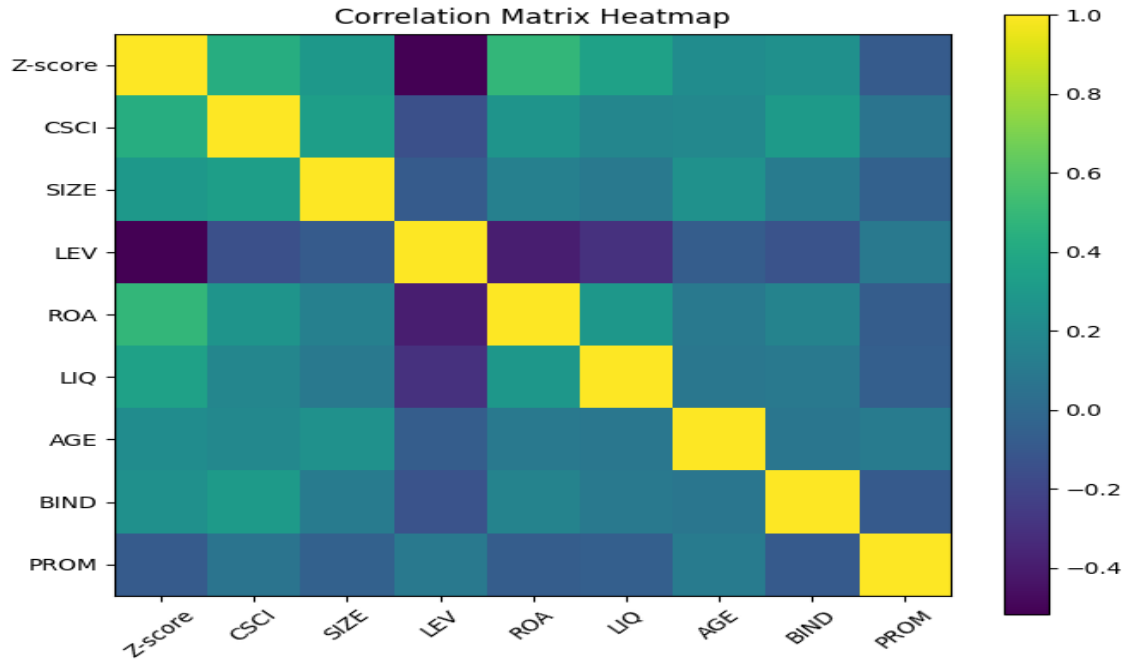
Source – Author's Calculation using E-Views

The results show that Corporate Sustainability Culture Index (CSCI) is positively correlated with Altman Z-score ($r = 0.428$, $p<0.01$), meaning that companies that have better sustainability-related organizational cultures, have better financial health and a lower risk for financial distress. Firm size (SIZE) also has a positive and significant relationship with the Z-score ($r = 0.291$, $p < 0.01$); bigger firms may have more financial resources and market presence, which could lead to a stronger financial resilience. Leverage (LEV), on the other hand, has a strong negative correlation with the Z-score ($r = -0.517$, $p < 0.01$), suggesting that firms with high leverage have a higher financial distress risk.

Similarly, there is a strong positive correlation between profitability and financial health ($r = 0.486$, $p < 0.01$), highlighting that the more profitable the company, the less likely it will be in distress. Liquidity (LIQ) is also statistically significant and positively associated with the Z-score ($r = 0.352$, $p < 0.01$) indicating that firms with better short-term solvency are financially stable. There are some weak but significant positive correlations between the two variables on the one hand and the Z-score on the other, with firm age (AGE) and board independence

(BIND) having a positive relationship. This suggests that organization age and governance quality could be positive factors in financial resilience. The Z-score, however, is negatively correlated with PROM, but the correlation is weak and statistically insignificant, meaning that there is no discernible direct relationship with financial distress.

Figure 3- Correlation Matrix of Study Variables




Source – Python

The heatmap suggests that there is no serious multicollinearity issue at an initial glance, since the intercorrelations between the independent variables are within acceptable limits. In general, the findings of the correlation analysis are preliminary support the hypothesis of this study, which is that the culture of sustainability of the company is correlated with the financial distress of the company.

### 5.3 Panel Regression Results

The panel regression results reveal that corporate sustainability culture has a significant positive impact on financial health, as measured by the Altman Z-score. The coefficient for the Corporate Sustainability Culture Index (CSCI) is positive and highly significant ($\beta = 0.284$, $p < 0.001$), indicating that firms with stronger sustainability-oriented organizational cultures tend to exhibit lower financial distress risk.

**Table 5. Fixed Effects Regression Results**

Dependent Variable: Altman Z-score

| Variable | Coefficient | Std. Error | t-value | p-value |
|---|---|---|---|---|
| Constant | 0.842 | 0.387 | 2.17 | 0.031 |
| CSCI | 0.284 | 0.052 | 5.46 | 0 |
| SIZE | 0.118 | 0.043 | 2.74 | 0.006 |
| LEV | -1.932 | 0.228 | -8.47 | 0 |
| ROA | 2.816 | 0.631 | 4.46 | 0 |

| | | | | |
|---|---|---|---|---|
| LIQ | 0.329 | 0.089 | 3.7 | 0 |
| AGE | 0.014 | 0.006 | 2.33 | 0.02 |
| BIND | 0.009 | 0.004 | 2.25 | 0.025 |
| PROM | -0.003 | 0.002 | -1.41 | 0.159 |

Source – Author's Calculations using E-Views

The regression model explains the financial distress (Altman Z-score) reasonably well as suggested by the value of $R^2$ (0.61). This means that the independent and control variables used in this model account for 61% of the financial distress (Altman Z-score). The adjusted $R^2$ of 0.58 agrees with the robustness of the model further after considering the number of predictors. Furthermore, according to the F-statistic (41.72 with $p<0.001$) the overall model is statistically significant and thus the regression model is fitting well and that all the explanatory variables have a significant effect on financial distress. This research result aligns with the research's major assumption: Embedded sustainability practices lead to organizational resilience and financial stability. The impact of firm size (SIZE) is also positive and statistically significant ($\beta = 0.118$, $p = 0.006$), indicating that larger firms have a higher capacity for their resources, more diversification and improved financing capabilities, which contribute to better financial resilience.

Conversely, the Altman Z-score shows a significant and negative relationship with leverage (LEV) ($\beta = -1.932$, $p < 0.001$), implying that companies with greater leverage levels are highly susceptible to financial distress. Profitability (ROA) has a strong positive relation ($\beta = 2.816$, $p < 0.001$) with the firms indicating that a firm which has a better earnings performance has a higher level of financial stability and resilience. Likewise, liquidity (LIQ) is positively and significantly related to financial health ($\beta = 0.329$, $p < 0.001$), indicating that companies with better short-term financial solvency are better equipped to resist financial pressures. Additionally, firm age (AGE) is positively and statistically significantly associated ($\beta = 0.014$, $p = 0.020$), suggesting that older firms might gain from their past experience, institutional learning and/or better adaptive capacities.

Economic governance variables also have meaningful impact. Board independence (BIND) shows a positive and significant relationship ($\beta = 0.009$, $p = 0.025$), suggesting that better governance oversight is associated with better financial stability, which is achieved by better monitoring and strategic decision making. The coefficient ($\beta = -0.003$, $p = 0.159$) of promoter ownership (PROM) is negative but statistically insignificant, indicating that the ownership concentration does not seem to have any meaningful direct effect on financial distress for this sample. Overall, the model has high level of explanatory power as seen from R2 = 0.61 and R2 adjusted = 0.58 meaning the independent variables accounted for significant part of the variance of financial health in the model. The statistically significant F statistic (41.72, p value < 0.001) signals the overall robustness and goodness of fit of regression model.

## 6. Findings

The findings of the study are empirical in nature, and the results obtained are very relevant from the point of view of the financial resilience of the listed companies of India, as the culture of corporate sustainability is found to have a positive contribution. The descriptive statistics reveal that the average firm's Altman Z score is 2.84, which means, on average, firms are

financially stable, but the minimum score of 0.72 implies that there are the financially distressed firms in the sample. The overall value of the Corporate Sustainability Culture Index (CSCI) is 4.76 out of 8, categorized as moderate level of sustainability integration among the companies, with some differences in the scores suggesting different sustainability orientations. Other financial indicators indicate moderate leverage, reasonable profitability, adequate liquidity, and relatively mature companies.

The results show that there is statistically significant and positive correlation between the CSCI and Altman's Z-score ($r = 0.428$, $p<0.01$), indicating that the financial distress is negatively related to the strength of the culture of the firm related to sustainability. Financial health is also positively associated with profitability ($r = 0.486$, $p < 0.01$) and liquidity ($r = 0.352$, $p < 0.01$), and negatively associated with leverage ($r = -0.517$, $p < 0.01$), suggesting that firms with high leverage are more at risk for distress. Other positive relationships include firm size, age, and board independence, while promoter ownership is not statistically significant.

The results of the fixed effects panel regression support the main argument of the study. The coefficient for CSCI ($\beta = 0.284$, $p < 0.001$) is positive and very significant, indicating the positive relationship between sustainability culture and the financial stability of the company and the likelihood of distress. This means that sustainability culture is a strategic competency of an organization that contributes to its resilience. Firm size ($\beta = 0.118$, $p = 0.006$) and leverage ($\beta = -1.932$, $p < 0.001$) also have significant positive effects on financial health and distress vulnerability, respectively, among the control variables. Profitability ($\beta = 2.816$, $p < 0.001$) and liquidity ($\beta = 0.329$, $p < 0.001$) significantly improve financial resilience. Analogously, age of the firm and board independence have positive significant impact on the firm's age and board independence, respectively, while the promoter ownership doesn't have any significant impact. The regression model is highly significant as evidenced by high $R^2$ (0.61) and adjusted $R^2$ (0.58) which shows that the variables included in the regression account for a significant portion of the variation in financial distress. Overall models are robustly created with a significant F-Statistic (41.72, $p<0.001$). The result is further confirmed with robustness analysis using logistic regression with the finding that the higher the level of sustainability culture, the lower the likelihood of financial difficulty. Overall, the results are important as they confirm that corporate sustainability culture is an important protective mechanism against financial distress.

## 7. Conclusion

The study investigated the effect of corporate culture on financial distress in Indian listed companies. The results suggest that firms that have a higher sustainability-oriented organizational culture have lower financial distress risk (as measured by Altman Z-score). The positive and significant impact of the Corporate Sustainability Culture Index indicates that sustainability is not just a compliance or reporting exercise, but a strategic organizational capacity. Other traditional financial factors—such as profitability, liquidity, firm size, and governance characteristics—are also important in terms of financial stability: Profitability and liquidity are associated with higher resilience, while leverage is associated with higher financial distress risk. These results are also supported by the robustness analysis. The results add to the body of knowledge on financial distress, by introducing sustainability culture as a vital factor

among the determinants of organizational resilience beyond traditional financial distress studies based on the accounting approach. In general, the results indicate that integrating the concept of sustainability within organisational culture can help to reinforce the financial long-term sustainability of the business, increasing adaptive capacity during periods of uncertainty.

**8. References**

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