Corporate Governance and Credit Risk : Evidence on Indian Firms Using Mixed Method

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Abstract

Purpose : The research study focused on analyzing the impact of word sentiments, corporate governance, and financial variables on the credit risk of Indian companies. The increasing significance of credit risk in lending decisions and the numerous financial crises motivated us to conduct this study.

Design/Methodology : In addition to the 55 Indian enterprises with the best credit ratings, we included 57 manufacturing companies under the insolvency and bankruptcy code. Finding offensive terms in the organizations' corporate governance (CG) reports, according to the Loughran–McDonald vocabulary, was the first goal. Additionally, panel logistic regression was run on three models: A combined model containing all factors, a model containing financial variables, and a model containing CG variables.

Findings : We discovered through textual analysis that IBC firms had a significantly more negative tone than solvent firms. CG elements are thought to be significant for accurately predicting credit risk, and their combination with financial measures improved predictive capacity, according to the results of the quantitative models. In conclusion, the findings were thought to be the most reliable in explaining occurrences related to bankruptcy or liquidation.

Practical Implications : It was suggested that stakeholders examine beyond financial ratios, which corporations may have "window dressed" in order to avoid default, by employing a mixed-method approach that focused on corporate disclosures and attitudes alongside quantitative information.

Originality : In contrast to earlier studies on CG, the current study used a mixed-method approach to analyze a company's creditworthiness from the perspective of lenders.

Keywords : **corporate governance, bankruptcy, textual, ratios, logistic, predictive**

JEL Classification Codes : G32, G33, G34

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Credit risk assumes significance with the crucial role it plays in different facets of finance. It is relevant because it affects financial stability, investment decisions, cost of capital, the broader economy, regulatory compliance, and risk management practices. Understanding and managing credit risk is essential for both financial institutions and investors to operate successfully in the financial markets. Credit risk management has become crucial for firms as an aftermath of the global financial crisis mainly ascribed to credit defaults (Saunders & Allen, 2010). Banks can lower credit risk by identifying red flags in borrowers' credit activity. Because a company's credit risk affects loan repayment and investment decisions, it is necessary to accurately predict these things.

Even though market- and accounting-based models are used extensively to predict default and bankruptcy,

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financial data can be subject to window dressing to misrepresent earnings quality, as demonstrated by the cases of Enron, WorldCom, and Satyam Computers in India (Gandhi et al., 2019). Thus, increasing emphasis is being placed on examining the non-financial aspects of firms, namely, the tone of disclosures in annual reports and corporate governance factors, in addition to financial information. The term "textual analysis" refers to methods used to extract information from pertinent texts in published documents by businesses. Research, analysis, and business intelligence can all benefit from the data gathered from texts (Loughran & McDonald, 2016). As a result, one of the approaches used in this study to forecast financial distress is textual analysis of particular sections of published annual reports. The effectiveness of corporate governance in an organization has also gained prominence over time. One significant factor influencing how well a company performs is its corporate governance. Inadequate corporate governance has the potential to harm shareholders' interests and cause a company to fail. Transparency, accountability, and credibility are all enhanced by effective corporate governance, which guarantees the survival of the business and improves its performance.

Against this backdrop, this study applies a mixed-method approach to evaluate credit risk. The first part of the research study examines the significance of textual analysis for bankruptcy prediction by using the Loughran and McDonald (2016) vocabulary to compare the negative terms used in corporate governance (CG) reports by solvent and bankrupt companies. The effect of corporate governance factors on the likelihood of bankruptcy is examined in the second part. The study also examines a hybrid model combining all variables: financial, textual, and CG (Fernando et al., 2019).

It has been shown that certain elements of a company's ownership structure, board makeup, management compensation, and personal traits can influence and forecast the likelihood of financial trouble. However, it is demonstrated that relying just on CG metrics fails to produce forecasts that are precise enough. On the other hand, models are capable of producing accurate forecasts ahead of time if financial ratios support them. Financial ratios, macroeconomic variables, and CG metrics are all combined in the best prediction model. The validity of six key components of corporate governance—board size, the proportion of independent directors, gender diversity, and the chairman and CEO roles—is evaluated by using the Ashbaugh-Skaife et al. (2006) methodology. The impact of ownership pattern on bankruptcy prediction is also tested, and the author identifies two variables for the same: The percentage of promoters' shares and the percent of promoter's shares pledged.

This study makes important contributions to the literature. First, it uses a mixed-method approach in considering both qualitative and quantitative measures for bankruptcy prediction. Second, the focus of prior works has been in the context of developed countries such as the United States; the impact of CG on financial distress is not as well researched in emerging economies (Li et al., 2008; Wang & Deng, 2006; Younas et al., 2021). This paper aims to study the impact of corporate governance parameters on the companies that went into IBC in India. Third, in India, with the debacle of Satyam Computers and its aftermath, the Companies Act was amended in 2013 with several caveats on corporate disclosures and transparency, including mandating independent directors and a woman director on board. Thus, to the best of my knowledge, CG practices and their relevance in impacting credit risk are relatively less explored in bankruptcy prediction, particularly in the Indian context. Fourth, suppose insolvent companies use more negative words in their reports; in that case, the tone of the CG reports is examined by comparing the negative words included in the Loughren McDonald lexicon with the CG reports.

Literature Review

Literature Review on Textual Analysis

The use of textual analysis methods in accounting and finance is a new and developing topic. These disclosures have the potential to supplement the data found in financial statements that are made public (Abrahamson &

Amir, 1996). The tone of documents produced as part of a disclosure process can indicate some underlying realities about a firm that may not be evident in its financial statements (Amani & Fadlalla, 2017; Kearney & Liu, 2014). Loughran and McDonald (2011) developed a financial dictionary with six lists of terms that correspond to six different sentiment kinds in the financial environment. In 2014 and 2016, the works were extended (Loughran & McDonald, 2014, 2016). Based on the dictionary, the first hypothesis is:

↳ **H_1 :** Higher degree of financial distress is associated with additional negative sentiment (words) in the CG report.

Literature Review on Corporate Governance

Argenti (1976) found a universal truth after doing a thorough investigation: Ineffective management is the primary cause of failure. Although this was way before the term "governance" gained widespread usage, we now refer to what was once considered "bad management" as "poor governance." Poor governance is associated with concentrated leadership, a non-participating board, inequality in top management, and a dual role of chairman and CEO. Our CG metrics measure these efforts, and the results consistently show evidence of the significance of good governance for the good performance of firms.

Prior literature establishes that good governance leads to improved firm performance, which in turn implies that the probability of financial distress is very low. The establishment of a revolutionary environment in the Indian market and corporate governance norms are two topics covered in this stream of studies, one of which was conducted by Thomas et al. (2023). To determine the company's market worth, the price-to-book ratio was employed. Three parameters were used to measure the moderating influence of corporate governance characteristics on market value: CEO duality, promoter stake, and board independence. The study's chosen firms' market valuation and firm-level innovation were shown to be significantly correlated, according to the findings. Empirical evidence supported the hypothesis that corporate governance procedures can stimulate the innovation ecosystem in the selected companies.

Bezawada (2020) conducted an analysis of CG procedures and the impact of board features, including size, makeup, and operations, on bank asset quality and performance. Bank performance was impacted negatively by the size of the board. The research findings gave RBI some understanding of CG so that it may formulate suitable policy guidelines for corporate governance in India's banking sector. The number of studies examining the connection between default risk and corporate governance practices has increased recently (Liang et al., 2016; Shahwan & Habib, 2020). The study looks at six governance characteristics in line with previous research on corporate governance and default risk. Kumar and Sudesh (2019) emphasized the impact of CG on firm performance for banks. Singh and Rastogi (2023) suggested that board size, percentage of women directors, and percentage of independent directors on the board of banks impacted the financial performance of Indian banks.

Board Size

There are different theories and views relating to board size and default risk. The two theories which discuss board structure are the agency theory and resource dependency theory. The agency theory advocates that a larger board can be detrimental to the overall interest of the firm (Chaganti et al., 1985). Jensen (1993) stated that large boards are associated with high agency costs and also delayed decision-making process and advocated that small size of boards would lead to greater efficiencies and better risk-taking abilities of management. The resource dependency theory states that a larger board size brings in more human capital and resources and thus increases firm performance and survival. Resource dependency theory is supported in research studies by Coles et al. (2008) and Martín and Herrero (2018).

Following the above theories and findings, the following hypothesis is developed:

- **H_2 :** Board size and default risk are negatively associated with Indian companies.

Board Independence

The US corporate scandals resulted in the Sarbanes-Oxley Act of 2002 and a growing focus on independent directors (Platt & Platt, 2012). It is generally acknowledged that a board will be more transparent and accountable and that a company's likelihood of going bankrupt would decrease with the number of independent members it has (Li et al., 2008). Previous studies show that financial distress and the ratio of independent directors are inversely correlated (Switzer & Wang, 2013). Based on these arguments, the hypothesis is:

- **H_3 :** Board independence is negatively related to default risk in India.

CEO Duality

CEO duality implies that the Chairman and CEO are the same individuals in the firm. It is perceived that the dual role leads to concentration of power and centralized decision-making and eventually reduces the board's independence (De Maere et al., 2014; Jensen, 1993). However, several studies advocate that power vested in one individual can lead to better firm performance (Simpson & Gleason, 1999) and also reduced agency costs. The vast majority of studies (Baklouti et al., 2016; Lu & Boateng, 2018) demonstrate a favorable impact of duality on the probability of default. Based on the rationale of agency theory, the following hypothesis is proposed:

- **H_4 :** In Indian companies, CEO duality is correlated favorably with default risk.

Gender Diversity

Recent studies have examined the positive effects of including more women on company boards (Adams & Ferreira, 2009). A study by Inamdar and Nagendra (2017) indicated that the presence of women on board had a significant impact on corporate reputation. The relationship between financial performance, corporate social responsibility (CSR), and board diversity was examined by Kumar et al. (2021). According to their study, corporations' CSR spending improved when the number and share of women directors rose. These research studies also support the idea that inducting women on boards results in increased transparency and lower agency costs. Studies showing a detrimental impact of gender diversity on credit risk were by Lu and Boateng (2018). Hence, the hypothesis developed is:

- **H_5 :** A company with more women on its board of directors has a lower chance of default.

Shareholding (Ownership) Pattern

Two aspects of ownership identified in this study are the promoter's shareholding and the promoters' shares pledged (Raju & Sapra, 2010). Agency theory advocates that with ownership and management separate, there is a conflict of interest between the owners and managers, thereby increasing agency costs. While some studies advocate that concentration of ownership with promoters will not only improve performance but also reduce agency costs (Jensen & Meckling, 1976), a second set of studies state that ownership concentration can be detrimental for minority shareholders as majority shareholders tend to influence decision making (Ashbaugh-Skaife et al., 2006; Shleifer & Vishny, 1997; Zeitun & Tian, 2007). Jensen (1993) stated that when shares are

vested with outside directors, it reduces the chances of firms defaulting. Wilson et al. (2013), in their study, said that family concentrated ownership helps firms survive more than otherwise. Three variables were analyzed in the Jain et al. (2023) study: Ownership structure, firm performance, and CG. The CEO duality, audit committee independence, and board independence were examples of CG procedures. The results showed that ownership structure and CG factors had a favorable impact on company performance. To be more specific, there was a favorable correlation between insider ownership, foreign ownership, CEO duality, audit committee independence, and firm performance. Thus, a reduction in financial difficulty would coincide with an increase in company performance. Hence, the following hypotheses were developed:

- **H_6 :** Higher promoter shareholding reduces the default risk for Indian firms.
- **H_7 :** Promoter shares pledged to increase the default risk of Indian firms.

Since corporate governance maintains the accuracy, transparency, and fairness of firm information, several studies view it as the key to predicting bankruptcy (Ciampi, 2015). The limitations of financial data and the importance of company governance have led the study to combine the two kinds of data.

So, the premise is:

- **H_8 :** A hybrid model with all variables affects the default risk of Indian enterprises.

From the prior works done above on CG parameters, it is observed that there is no consensus on the relation between the parameters and credit risk, and the findings vary across countries. Thus, this study fills the gap in the Indian context by focusing on the word sentiments of the reports and also identifying if the combination of CG and financial information increased the default prediction across Indian firms.

Methodology

Dataset and Sample

The research study has applied a mixed method approach and combined qualitative techniques by conducting word analysis coupled with logistic regression to identify the key quantitative variables that impact credit risk, and, thereby, bankruptcy. Prowess IQ is the source of the financial information and CG reports. Between the fiscal years (FY) 2016–2017 and 2021–2022, it was discovered that 57 businesses had filed for bankruptcy under the insolvency and bankruptcy code (IBC). Since IBC was first launched in November 2016, the firms that were part of it started in FY 2017. The years 2020 to 2021 were excluded since the Indian government suspended the IBC procedures for some firms as a relief during the COVID-19 period. A matched sample of 55 businesses with the highest credit ratings of "AAA" and "A" belonging to the same industries as the sample of IBC firms was selected. The solvent companies were selected from the same industry if their average size (log of total assets) during the sample period fell between one standard deviation (on either side) of the size of IBC organizations. The CG reports were collected and reviewed for two years prior to each company's filing date. In addition, the companies were screened to ensure that all financial data and CG reports were available for additional examination.

Textual Analysis

The first analysis of the study looks for tone variations in the CG reports between IBC and similar solvent corporations. Using a two-sample test of proportion, the amounts of negative words in IBC and solvent firms are

compared. The first research hypothesis (H_1) is tested by applying the Loughran and McDonald approach to word analysis. NVIVO software was used to conduct the word analysis.

Quantitative Analysis

A panel logistic regression approach was followed, with the financial data being in an uneven panel format. With τ significant themes, there were X_τ variables in the logistic regression model (G_i). The logit model is:

$$G_{i,t} = \ln\left(\frac{Q_{i,t}}{1-Q_{i,t}}\right) = \delta_0 + \sum_{n=1}^{\tau} \delta_n X_{n,i,t} + \vartheta_{i,t}$$

$$\text{where, } Q_{i,t} = \frac{1}{1 + e^{\delta_0 + \sum_{n=1}^{\tau} \delta_n X_{n,i,t} + \vartheta_{i,t}}} \quad \ldots\ldots\ldots\ldots (1)$$

Q_i is a binary variable for *i* companies, where $Q_i = 1$ for companies under IBC and $Q_i = 0$ for highly creditworthy firms. δ_0 is the intercept of the equation while δ_n depicts the slope coefficients for every important theme. $\vartheta_{i,t}$ represents the error term, and *t* represents the time period in the panel. STATA software was used to run the logistic regression.

Control Variables

It is crucial to account for other variables that are known to have an impact on the variable of interest when modeling the relationship between CG procedures and the chance of default. Firm size and firm age are used as control variables while estimating credit risk and default, which is in line with the body of existing literature (Dang et al., 2018; Gupta et al., 2020).

Variables Used in the Study

The size of the board, the percentage of independent directors, gender diversity (women directors), duality (one person serving as both the chairman and the CEO), promoter ownership, and shares pledged are the CG factors that have been selected for the study (Platt & Platt, 2012; Wang & Deng, 2006). If the CEO chairs the board, a dichotomous variable of value 1 is provided; if not, a variable of value 0 is provided (Table 1). Under the general headings of profitability, solvency, activity, liquidity, and market ratios, this research study has identified nine ratios. The selection criteria for ratios are those that have been applied in previous empirical works in predicting insolvency (Chen et al., 2013; Sehgal et al., 2021). As seen from the VIF from Table 1, the multi-collinearity among the variables is not significant (Li et al., 2021). For the dependent variable, solvent companies were coded "1," and bankrupt companies were coded "0."

Table 1. ***Financial Variables and Their VIF***

Variable		Meaning	VIF
Current ratio (CR)	Liquidity	Current assets/Current liabilities	1.29
Gross fixed asset utilization ratio	Activity	Turnover/Gross fixed assets	1.25
Export/Sales	Activity	Percent of export sales/Total sales	1.20
Market capitalization/Debt	Market	Market capitalization /outstanding debt	3.32
Debt/equity (D/E)	Solvency	Total borrowings/Shareholders' funds	1.11

Cash flow from operations/Debt (CFO/Debt)	Liquidity	Cash flow from operations/Debt	3.24
Finished goods cycle	Activity	Cost of production/Finished goods inventory*365	1.07
Return on total assets (ROTA)	Profitability	PBIT/Total assets	1.66
Net profit margin (NPM)	Profitability	Net profit/Sales *100	1.09
Size	Control	Natural log total assets	1.24
Age	Control	From the year of incorporation	1.13
Promoters' shareholding (%)	CG	Promoter shares/Total shares	1.22
Promoters' shares pledged (%)	CG	Promoters share pledges/Total Promoters shares	1.21
Board size	CG	Number of members on Board of Directors	1.53
Independent directors	CG	Percent of BOD as independent	1.08
Duality	CG	Dummy "1" if CEO and Chairman both else "0"	1.19
Gender diversity	CG	Number of women in BOD	1.17

Predictive Ability of Models

The receiver operating characteristics (ROC) curve is plotted in order to evaluate the models' predictive power. The AUC, or area under the ROC curve, depicts the model's accuracy in foretelling real defaults. The area under the ROC (AUROC) is transformed linearly into an accuracy ratio. This is also called the Gini coefficient (Chang et al., 2018). The robustness of the model is depicted with a higher AR.

Analysis and Results

Descriptive Statistics

The descriptive statistics from Table 2 indicate that the average board size is 8, of which, on average, 51% are independent directors. This fulfills the criteria of the Companies Act that mandates that a minimum of one-third of directors be independent. It can also be seen that, on average, 47% of ownership is vested with the promoters, which is specifically true in the Indian context where there are several family owned businesses. Promoter shares pledged are a sign of impending distress and a significant indicator of credit risk, and it is observed that, on average, 18% of promoter's shares remain pledged. The minimum and maximum values are 0 and 100%, respectively, which corroborates with the sample taken as highly creditworthy firms are backed by strong credit ratings while bankrupt firms facing a cash crunch would typically pledge shares to raise cash. The maximum value of gender diversity for the board of directors is 3 out of the total 18. This means that around 16% of the directors are female.

Table 2. ***Descriptive Statistics***

Variable	Mean	Std. Dev.	Min.	Max.
Size	9.55	1.85	3.05	13.97
Age	35.66	20.36	3	119
Current ratio	1.155	0.758	0	5.35
Debt/Equity	1.798	4.13	0	46.27
Gross fixed asset utilization	5.177	15.72	–17.83	152.02
Net profit margin	–47.81	97.2	–20.28	30.4

Finished goods cycle	68.015	354.96	0	575.27
Return on total assets	–2.40	15.08	–28.92	38.71
Export sales (percent)	14.36	20.48	0	96.73
Market Cap/Debt	16.86	137.55	0	2098.10
Promoters ownership	47.60	22.39	0	81.06
Cash flow/Debt	1.162	16.77	–3.32	345.36
Promoters shares pledged	18.46	32.04	0	100
Board size	8.388	3.131	2	18
Independent directors	0.5187	0.1240	0	0.8
Duality	0.3904	0.488	0	1

It is evident that the current ratio, which includes the accounting and market ratios, has an average value of 1 but can have minimum and maximum values of 0 and 5, respectively. This clearly shows that liquidity position can vary hugely between solvent and insolvent firms. The cash flow/debt varies from negative to very high, again confirming that bankrupt firms can be faced with cash crunch and negative cash flow from operations. Furthermore, the profitability ratios exhibit a broad range of maximum and lowest values. Negative minimum values indicate that insolvent firms experienced negative earnings throughout the period under investigation.

Findings from Word Analysis

The negative word list is derived from the CG reports for both sets of enterprises, and we have compared it with the vocabulary provided by Loughran and McDonald (2016). According to the data, the percentage of negative terms for bankrupt enterprises was 2.27%; whereas, it was 0.72% for solvent firms. Table 3 contains the findings from the two-sample test of proportion. At the five percentile, the test statistic value exceeds the *z*-statistic. As a result, the first hypothesis (H_1)—that is, the idea that a company's financial distress is correlated with the use of more negative language in corporate disclosures—is verified.

Table 3. ***Results from the Test of Proportions***

	Bankrupt Firms	High Creditworthy Firms
Negative word count	3,963	2,331
Total world count	174,368	322,086
Percentage	2.27%	0.72%
Z-statistic (two-sample test)	34.32	
p-value	0.000	

Note. The outcomes of a pooled two-sample test of proportion are displayed in this table. For both sets of firms (solvent and IBC), the percentage of negative words found in the Loughran–McDonald vocabulary is compared. The fraction of negative terms in IBC enterprises is higher than in solvent firms with similar features, according to the null hypothesis.

Results from Panel Logistic Regression

Table 4 displays the estimation outcomes for several model specifications using various forms of information. The initial findings from Model 1 highlight the important corporate governance variables. Model 2 considers financial ratios that have already been empirically evaluated in research on bankruptcy prediction. Model 3 includes all the variables in order to look into the statistically relevant aspects that affect default risk and, eventually, bankruptcy.

Table 4. ***Empirical Findings from the Three Models***

	Model-1	Model-2	Model-3
Intercept	24.508 (4.85) ***	–0.04698 (0.00) **	56.17 (3.11) **
Size of BOD	–19.413 (–3.06) **		–64.97 (–2.95) **
Percent of ID	–0.17476 (0.25)		–37.73 (2.26) **
Gender diversity	–3.058 (–3.06) **		–6.16 (–1.85) *
Duality	3.0438 (1.66) *		3.28 (0.67)
Promoters percent holding	–0.1743 (–5.62) ***		–0.400 (–3.41) **
Promoters shares pledged	0.166 (9.11) ***		0.2666 (2.80) **
CFO/Debt		–1.432 (–0.42)	–2.416 (–0.41)
Market Cap/Debt		–0.6300 (–1.50)	–0.386 (–0.63)
Debt/Equity		7.184 (6.35) ***	10.70 (3.82) ***
Current ratio		–2.639 (–1.49)	–6.261 (–1.97) **
Gross fixed asset utilization		0.1422 (2.32) **	0.134 (1.41)
Net profit margin		–0.1658 (–2.18) **	–0.3271 (–0.60)
Finished goods cycle		–0.0243 (–1.25)	–0.0375 (–0.64)
Return on total assets		–1.737 (–3.95) ***	–1.995 (–2.07) **
Export sales		–0.2664 (–2.96) **	–0.1920 (–1.46
Size		1.943 (2.22) **	6.120 (3.73) ***
Age		–0.5438 (–5.25) ***	–0.797 (–4.52) ***
Pseudo *R* square	0.351	0.604	0.691
Likelihood ratio	302.49 ***	90.61***	33.15***

Note. The models' quality of fit is evaluated using Wald χ^2, likelihood ratio χ^2, and pseudo R^2. In comparison to the accounting and market information-based model, Wald χ^2 assesses how well corporate governance information explains variance in default probability.

**Denotes significance at the 5% level; ***Denotes significance at the 1% level ; * Denotes significance at the 10% level. *Z* - values are presented in parentheses.

According to Section 2 hypotheses, Model 1 demonstrates that most CG variables have a sign and are significant, as predicted by hypotheses 2–7. Board size is significant and has a negative coefficient. This shows that a large board size lowers financial distress while a small board size raises a firm's likelihood of default. The promoters' shareholding bears an inverse relationship with default risk, thereby implying that a greater concentration of shares with promoters reduces financial distress. Shleifer and Vishny (1997) contended that when the ownership level increases, owners are motivated to act in their own best interests, increasing the risk of a default by the company. However, this stands refuted in the Indian context. The estimates imply that as promoter ownership increases, the firm's likelihood of defaulting reduces. It can be seen that the promoters' shares pledged are very important and bear a positive coefficient, thereby implying that as the promoters' shares pledged increases, the probability of a firm defaulting also goes up. The positive coefficient for CEO duality demonstrates that duality lowers the efficacy of the board and raises the likelihood that the company will go bankrupt.

The results of Model 2 demonstrate the importance of a firm's solvency position, as indicated by the debt/equity ratio. A positive indication indicates that a high level of leverage raises financial risk and may ultimately result in bankruptcy. The profitability ratios as return on total assets and net profit margin are significant and inversely related to financial distress. The gross fixed asset utilization ratio has a positive and

significant impact on the default probability of firms. A number of Indian steel businesses have recently raised their fixed asset investments in anticipation of rising demand, which has led to higher activity levels. However, the increased demands were never met, which left these businesses with unmanageable debt levels. The coefficient of the gross fixed asset utilization ratio has a positive value since several steel companies filed for IBC throughout the study's sample period. The high asset utilization rate belies the financial difficulties these businesses faced as a result of their debt load. The coefficient of export/sales displays a negative sign when exports decline as a percentage of sales, which could indicate a loss of revenue and a consequent financial burden on enterprises. When results are compared between settings with a single source of information (Models 1 and 2) and settings with multiple sources of information (Model 3), it is evident that most estimated coefficients have robust signs and significance, even though the estimated coefficients' magnitudes vary slightly. Pseudo-R^2 values are higher when Model 3 is used. It confirms the hypotheses that an integrated hybrid model with financial and governance measures is robust in predicting financial distress and credit risk.

Predictive Ability of the Models

It is observed that the predictive ability and accuracy ratio is highest for the combined model followed by the one with financial information and then only corporate governance variables (Figure 1). The accuracy ratio remains above 70% for all three models (Li et al., 2021), thus corroborating that all three models are robust (Table 5).

Figure 1. ***ROC Curves for the Three Models***

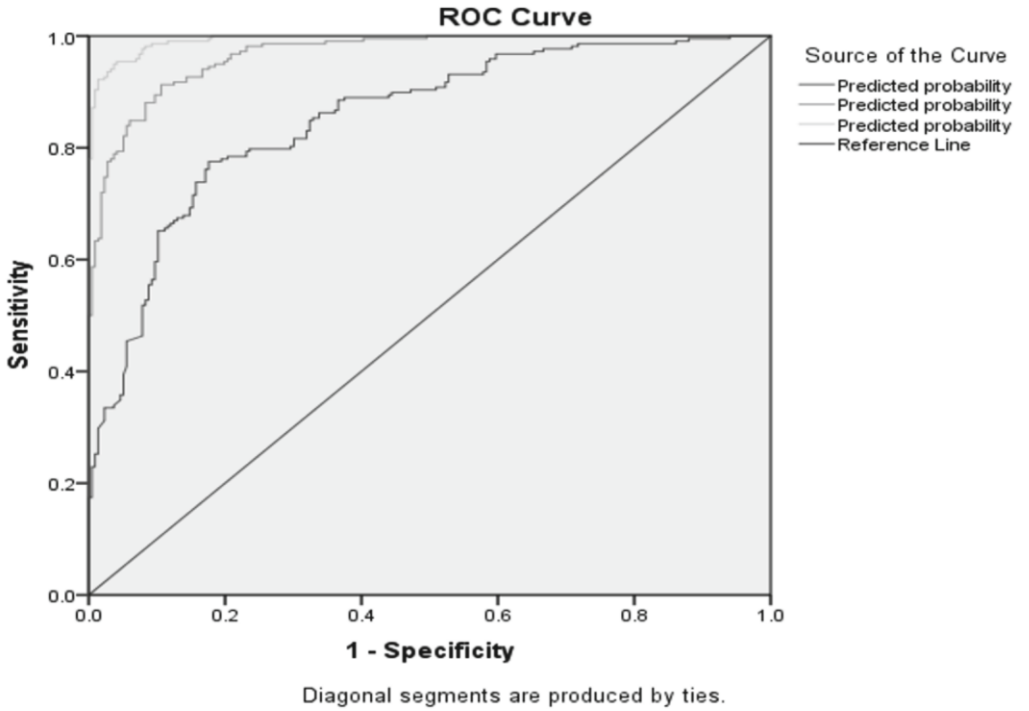

Table 5. ***Accuracy Ratio***

Model-1	Model-2	Model-3
70.6	93.4	98.6

Discussion and Implications

The textual analysis's findings demonstrate that there is a considerable difference in the number of derogatory terms used in corporate governance reports between solvent and insolvent companies. The outcomes are unmatched for Indian businesses, and the mixed method validates the validity of the findings. Using the tone of financial reports to gauge financial distress has advantages over other approaches currently being employed by regulators. Practitioners can utilize the textual analysis technique to supplement their study of financial data. Auditors can also use textual data to spot fraud and accounting errors as well as to forecast bankruptcy. Rajan et al. (2015) stated that lenders may "window dress" financial data in order to comply with regulatory standards to the bare minimum or even above them.

These empirical results, which show a substantial relationship between CG practices and financial distress, directly address concerns about effective monitoring, economic prosperity, and the avoidance of corporate failure. The research outcomes have ramifications for management, lenders, regulators, and investors, as well as for theory and practice. They have important real-world bearing on financial stability. Above all, the knowledge helps creditors avoid possible losses. It also supports owners and management in recognizing issues and putting the necessary repairs in place. Along with authorities who monitor companies, both listed and not, it also addresses the obligations of shareholders and other stakeholders. Due to huge losses for institutions that had previously reached or exceeded regulatory standards, it may be challenging to predict extreme events using financial data (Gandhi et al., 2019). Thus, lenders and regulators should examine how often negative words appear in the annual reports of all firms to assess the chances of any default or downturn.

The results from the three models and the accuracy ratio indicate that integrating information on CG, financial ratios, and market ratios is imperative for a robust unified model to predict default risk. This is especially important in light of the fallout from the Indian financial frauds including ICICI Bank, Satyam Computers, and ILFS. Strong governance mechanisms, attitudes from the wording of annual reports, and financial data can forewarn lenders of potential defaults and prevent financial trouble. The agency theory is supported in the Indian context by the ownership concentration hypothesis, which shows that companies with large ownership concentrations lower their default risk. Consequently, banks should take into account the ownership structure of the companies when establishing risk strategies trends in promoters' shares pledged when developing strategies for firm- or sector-specific exposure. The findings also support the notion that larger boards and gender diversity decrease financial distress. A loan extension or better caveats may also be considered for companies with more effective governance practices if they have good financial ratios and competent governance.

Conclusion

This study uses a mixed-methods approach to assess textual content and quantitative metrics in order to predict default and business failure. The disclosure of corporate boards' direct involvement in risk management and decision-making was made possible by the corporate and banking frauds, which also forced the implementation of several regulatory measures intended to maintain the stability and strength of the financial system. The results from quantitative analysis reveal that the size of the board, gender diversity, ownership pattern, and duality are all significant in evaluating the financial distress of firms. The findings also confirm that liquidity solvency profitability and market ratios continue to be significant drivers of default. The study's conclusions spark a new debate on how to improve the methods now used by businesses to lower default risk. According to the research, utilizing CG metrics by itself does not produce predictions that are precise enough. However, models can produce accurate forecasts if financial ratios support them. Thus, the most accurate forecasting model should include market ratios, financial ratios, and company governance metrics.

Limitations of the Study and Scope for Future Research

The study has used a small sample size and the findings may differ with an increased sample size. Also, the CG reports are taken for three years prior to bankruptcy and the time horizon can be increased to see if the results change. The study did not incorporate macroeconomic variables, and the same can be done in the future to identify the significant variables. Among the CG variables, audit-related variables can be added in the future to see their significance in predicting bankruptcy.

Author's Contribution

Dr. Vandana Gupta conceived the idea and developed qualitative and quantitative designs to undertake the empirical study. She extracted research papers with high reputations, analyzed them for literature review, and identified the research gaps. The qualitative analysis was done by using NVIVO for conducting the word analysis. She conducted empirical analysis using Stata. She verified the analytical methods and supervised the study. She wrote the original draft and finalized the manuscript after review and editing.

Conflict of Interest

The author certifies that she has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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