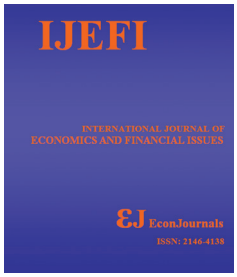

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The Impact of Corporate Governance Attributes on Financial Distress among the Listed Firms in Pharmaceuticals Industry of Bangladesh

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ABSTRACT

This paper investigates the relationship between corporate governance and the likelihood of financial distress. To evaluate the impact of corporate governance on financial distress, a multiple regression model and longitudinal panel data are used. Corporate governance is determined by the board of directors, audit committee, and ownership structure, whereas the Altman Z-score is used to indicate financial distress. The findings imply that financial distress is influenced by corporate governance variables (board independence, auditor independence, auditor opinion, sponsor directors ownership, and foreign shareholders), and firm-level variables (sales growth, performance, liquidity, firm size). From an academic standpoint, this paper adds to our understanding of the association between corporate governance practices and the risk of financial distress in emerging markets like Bangladesh. The findings may encourage Bangladeshi listed companies to follow and implement good corporate governance practices, increasing investor, regulator, and stakeholder confidence.

Keywords: Corporate Governance, Financial Distress, Board of Directors, Audit Committee, Ownership Structure
JEL Classifications: G0, G1, G3, G4

1. INTRODUCTION

Frustrations and anxiety with the performance of publicly traded companies have thrived for decades (Colley and Doyle, 2006). As long as publicly recognized scandals produced a climate of mistrust and uncertainty among investors (Miglani et al., 2015). These conditions have consequently, compelled the nations to create a robust corporate governance framework to survive in a dynamic and open financial market (Javaid and Saboor, 2015). Generally, the ultimate goal of Corporate governance is to protect shareholders from any potential conflicts of interest among directors, ensuring they attain a justifiable profit on their investments (Fama and Jensen, 1983; Gul, Sajid, Razzaq, and Afzal, 2012). Effective corporate governance practices enhance firm performance and safeguard businesses from the possibility of financial trouble (Abdullah, 2006; Hodgson et al., 2011; Parker et al., 2002). Whereas poor corporate governance practices ultimately obstruct investment prospects, and the expansion of the capital market, they also elevate the likelihood of encountering financial distress (Udin et al., 2017). In addition, weak corporate governance (involves a lack of transparency, accountability, and fairness in decision-making processes, conflicts of interest, abuse of power, and inadequate communication with shareholders and stakeholders) causes significant financial loss, reputational damage, legal disputes, and erosion of trust from investors, employees, and customers which lead a company on the way of distress (Memba and Nyanumba, 2013). According to Wruck (1990), insufficient management, declining performance, or an economic crisis could lead a company into a state of financial distress. Furthermore, the influence of corporate governance on financial distress holds significance due to the control that directors exert over a firm's outcomes (Elloumi and Gueyié, 2001). Businesses might be

compelled to initiate bankruptcy proceedings or be coerced into liquidation as a result of financial distress (Samanta and Johnston, 2019), stemming from inadequate long-term financial choices made by company executives (Abdulahi, 2017).

At the same time, the capacity to foresee financial and corporate bankruptcy holds importance both for individual investors and on a societal level, as it signifies the misallocation of resources (Abdulahi, 2017; Bhagat and Black, 2001). Early warning on the possibility of bankruptcy allows managers and investors to take preventive action and differentiate between favorable and unfavorable investment prospects (Filsaraei and Moghaddam, 2016). Indeed, since the 1980s, A substantial volume of literature emphasizing the significance of corporate governance and its impact on the probability of financial distress across numerous contexts, including the USA, Australia, Taiwan, and China (Chang 2009; Daily and Dalton 1994; Manzaneque, Priego, and Merino 2016). Yet, there have been few studies carried out in the realm of emerging economies, specifically focusing on Asian emerging markets (Mgammal, 2022). The correlation between corporate governance attributes and financial distress varies by country (Younas et al., 2021). As an emerging Asian market, firms in Bangladesh face numerous challenges arising from inadequate corporate governance, including familial concerns, institutional issues, political affiliations, corruption, and deficiencies in fostering a culture of responsibility and answerability (Uddin, Khan, and Hosen, 2019). Haque et al. (2014) recommended that in Bangladeshi firms, there exists a negative correlation between corporate governance and the ratio of debt. Remarkably, Limited research has been conducted regarding the correlation between corporate governance and company financial distress within Asian markets, with a specific focus on Bangladesh (Uddin et al., 2019).

The purpose of this research is to examine the link between corporate governance and financial distress among manufacturing sector firms listed on the Dhaka Stock Exchange in Bangladesh. The findings of this study might capture the attention of academic researchers, practitioners and regulators, shareholders, management, potential investors, and other individuals invested in publicly traded firms. They seek insights into the standard of Corporate Governance (CG) in an emerging economy such as Bangladesh. Furthermore, they aim to comprehend its effects on financial distress, especially in the absence of existing empirical support. Subsequent sections of the paper follow this sequence: The "Literature review" section offers a review of prior research concerning the subject of the study, categorized into two distinct streams; first, the theoretical background, and second, empirical overviews and descriptions of our hypotheses; The section titled "Methodology" outlines the procedure employed for selecting samples and collecting data, the statistical methodology, and the specifications of the study model; and the "Findings and analysis" section reports the findings and analysis.

2. LITERATURE REVIEW

The literature review of this study is presented here in two parts. The first part is the theoretical background; which highlights the theories are highly related to the concept. And the second part is empirical evidence where related researches, variables description and hypothesizes development are highlighted.

2.1. Theoretical Background

Trade-off theory, signaling theory, agency theory, stakeholder theory, stewardship theory, and transaction theory have all been utilized to elucidate the impact of corporate governance practices on the occurrence of financial distress within companies listed on the Dhaka Stock Exchange in Bangladesh.

2.1.1. Agency theory

Agency theory significantly influences corporate governance (Linder and Foss, 2013). Babeau (1969) drove corporate governance, concentrating on the separate ownership of companies that controls the problem of principal and agent. They recognized corporate governance as an instrument by which the board of directors will play the part of a monitoring device to lessen the problems conveyed by the principal-agent relationship (Atosh and Iraya, 2018). The relevance of this theory to the current study lies in the fact that firms, especially those listed on the DSE, are inclined to sustain enduring customer connections by furnishing precise market details to clients, adopting customer-centric policies, and possessing effective leadership and a positive brand image. As a result, the characteristics of board members will improve shareholder decisions and promote customer relations in the long run.

2.1.2. Stakeholder theory

This theory specifies that diverse stakeholders habitually surround a corporate entity (Atosh and Iraya, 2018). Rajan and Zingales (1998) and Zingales (1997) defined that a company has to shelter the interests of all the parties who contribute to the value creation and make investments in the business. The theory's pertinence to the focus of this research lies in its overarching assertion that firms are likely to sustain their competitiveness, especially when they uphold decentralized frameworks that enhance the dissemination of information to stakeholders. As a result, the magnitude of the invasion of financial crises into firms will be diminished. Both internal and external stakeholders are prone to experiencing acknowledgment from their organizations when there are transparent communication channels fostering teamwork and employee commitment. These aspects are grounded in organizational governance.

2.2. Empirical Evidence

The connection between corporate governance and financial distress arises from the fact that financial distress represents an advanced phase of a "protracted process of decline" and a "downward spiral" (Hambrick and D'Aveni, 1992). Initial deficiencies in business performance, extreme strategic actions, and sudden environmental deterioration are all important characteristics of the downward spiral (Ali and Nasir, 2018). Simpson and Gleason (1999) found that CEO duality has been interconnected to a lower risk of financial distress. By examining a selection of companies from Taiwan T. S. Lee and Yeh (2004) explore the correlation between the potential hazard of wealth appropriation by dominant shareholders and the probability of encountering financial distress. Their evidence suggests a

favorable link between the risks of financial distress. Parker et al. (2002) studied how corporate governance attributes impact the viability of companies facing financial distress. The findings indicate that financially distressed firms with higher block holder and insider ownership are more prone to endure, whereas the probability of survival diminishes due to CEO replacement. Appendix 1 summarizes the articles that were reviewed in order to conduct the study.

2.3. Hypothesis Development

2.3.1. Board size and financial distress

The member of board of directors refers the board size of a company (Gales and Kesner, 1994). Previous studies found that companies with a large board size were able to perform better monitoring, reducing the company's financial failure (Handriani et al., 2021). Manzaneque et al. (2016), discovered empirical evidence that board size and board independence for companies with family and public ownership had a negative and significant influence on the company's financial distress. Moreover, Kalbuana et al. (2022); Agustina and Anwar (2021); Datta (2018); and Nasution (2007) found that board size has a positive relationship with financial distress. In Bangladesh, empirical research on board size and financial distress still falls short. This study attempts to fill the gap by empirically demonstrating that board independence improves financial distress. Hence, the hypothesis is:

H_1= Ceteris paribus,there is a positive relationship between board size and financial distress.

2.3.2. Board independence and financial distress

Independent directors, are the non-executive member of board of directors. According to Rutherford and Buchholtz (2007), a rise in the ratio of external directors is linked favorably to the extent of board attentiveness. This contributes to mitigating information mismatch and consequently enhances the caliber of information within the board. As outlined by Bathala and Rao (1995), external directors have a significant role in proficient corporate governance, especially in tasks related to decision-making and oversight. Brédart (2014) found a negative association with financial distress. Hence, the hypothesis is:

H_2 = Ceteris paribus,there is a negative relationship between board independence and financial distress.

2.3.3. Board diversity and financial distress

The term "board diversity" describes the variability of the board members, who may have a range of characteristics, including gender or nationality (Carter et al., 2003). Investors view the presence of female directors favorably because they believe that having more women on the board will enable the company to implement better strategies when dealing with problems related to the economy, society, and the environment (Loukil et al., 2019). Therefore, the rising participation of women can boost social and financial outcomes as well as reputation. Women are also more anxious and internally oriented than men (Tamres et al., 2002). Hence, the hypothesis is:

H_3 = Ceteris paribus,there is a negative relationship between board diversity and financial distress.

2.3.4. Audit committee size and financial distress

Al-Najjar (2010) demonstrates that large audit committees give more resources for senior management and financial report quality monitoring. It might strengthen corporate governance procedures and internal monitoring resources. Beasley and Salterio (2001) demonstrate how appropriately sized committees can use their expertise to support the committee's monitoring efforts. Yet, it has been discovered that there is only a tenuous connection between the size of the audit committee and corporate success (Beasley and Salterio, 2001; Pincus et al., 1989). However, Lin et al. (2006), Xie et al. (2003), and Haji-Abdullah et al. (2009) found a positive relation between audit committee size and financial distress. This is due to the presence of experienced and knowledgeable members is imperative. Hence, the hypothesis is:

H_4 = Ceteris paribus,there is a positive relationship between audit committee size and financial distress.

2.3.5. Independence of audit committee and financial distress

The audit committee's composition prioritizes independence. It is defined by the proportion of non-executive directors to executive directors. The effectiveness of the audit committee can be compromised by executive members who exert influence over the board's decision-making process (Ruiz-Barbadillo et al., 2007). A higher proportion of independent directors enhances managerial oversight (Xie et al., 2003). This suggests that an audit committee with greater independence achieves heightened audit coverage (Ghafran and O'Sullivan, 2013; Vinten and Lee, 1993). An entirely independent audit committee (composed of non-executive members) is associated with results and is anticipated to enhance governance by establishing a more efficient committee (Xie et al., 2003). Similarly, Ruiz-Barbadillo et al. (2007) argue that there should be a appropriate ratio of non-executive directors within an audit committee. Hence, the hypothesis is:

H_5 = Ceteris paribus,there is a positive relationship between independence of audit committee and financial distress.

2.3.6. Auditor's opinion and financial distress

The auditor's opinion determines whether the company can establish a company in the future (Going Concerned) (Santosa and Wedari, 2007). The financial distress is influenced by the audit opinion, as demonstrated in studies by Hudaib and Cooke (2005) and Setyaningsih (2013). The nature of the opinion i.e. qualified or unqualified received by the firm and is represented by a binary variable. This variable takes a value of 1 if the company receives an unqualified audit report and 0 if it receives any other type of report. Owing to the significance of auditors' opinions in predicting financial distress, empirical findings vary. For instance, certain studies (Hopwood, McKeown, and Mutchler 1989; Sun, Li, Huang, and He 2014) establish the worth of auditors' opinions as effective predictors, while others (Altman and McGough 1974; Koh and Killough 1990) do not concur. Hence, the hypothesis is:

H_6 = Ceteris paribus,there is a negative relationship between institutional audit opinion and financial distress.

2.3.7. Institutional investors and financial distress

Several studies has examined the effect of institutional investors (banks, insurance companies, pension funds, mutual or trust funds) on firm survival (Manzaneque et al., 2016). They emphasize

their effectiveness as a corporate governance mechanism for monitoring management (Blair, 1995) and their emphasis on long-term performance rather than short-term or annual performance as management does (Donker et al., 2009). As a result, in a concentrated ownership context, where other corporate governance mechanisms may be ineffective, institutional investors are expected to play an active role in controlling management. The empirical evidence, according to these arguments, is also mixed. Daily and Dalton (1994), Kim and Haque (2002), Udin et al. (2017), and Mangena and Chamisa (2008) discovered a negative relationship between institutional investors and the likelihood of financial distress. Donker et al. (2009), on the other hand, report a positive relationship between both variables. Hence, the hypothesis is:

H_7 = Ceteris paribus,there is a negative relationship between institutional investors ownership and financial distress.

2.3.8. Foreign ownership and financial distress

Firms with foreign shareholders face distinct regulatory prerequisites and informational contexts in comparison to firms with solely domestic shareholders. Furthermore, foreign investors are generally regarded as possessing greater sophistication compared to local investors, both in terms of investment background and the competence to gather, interpret, and assess information pertinent to value (Gul et al., 2012). Chen et al. (2002) provided that firms with foreign investors encounter distinct regulatory demands and informational contexts in comparison to firms that solely have domestic shareholders. Furthermore, indications propose that foreign ownership correlates with enhanced corporate transparency and lower information asymmetry (Kang, 1997; Kim and Haque, 2002). Hence, the hypothesis is:

H_8 = Ceteris paribus,there is a negative relationship between foreign ownership and financial distress.

2.3.9. Individual (public) ownership and financial distress

The more public the ownership, the more dispersed the firm. Because of the free rider problem, when ownership is diffused, individual owners are less interested in monitoring management's activities. It can lead to a lack of proper management activity monitoring. Once again, management may attempt to manipulate the financial reporting process in order to conceal their opportunistic behavior. There could be a single large shareholder. For his or her own benefit, such a shareholder could monitor managerial activities as well as the overall financial reporting process. Their oversight can also keep management from expropriating minority shareholders (Khan et al., 2011). Chau and Gray (2002) have examined that public ownership has a positive impact on voluntary disclosure. Another study by Lee et al. (2013) has shown a negative correlation between public ownership and the efficiency of profitability. Thus, public ownership positions exert influence and control over the firm's management, potentially leading to the firm's survival. Hence, the hypothesis is:

H_9 = Ceteris paribus,there is a negative relationship between individual investors ownership and financial distress.

3. CONCEPTUAL MODEL DEVELOPMENT

In this study, the data analysis techniques involve grouping data into dependent variables, and independent variables. This study employs one dependent variable, nine independent variables. Thus, the conceptual model of the study is demonstrated in Figure 1:

4. RESEARCH METHODOLOGY

4.1. Data and Sample

The information on corporate governance practices and financial distress came primarily from secondary sources. Secondary data sources included annual reports, the DSE journal articles, and the company website. The sample consists of 30 pharmaceuticals enterprises registered on the Dhaka Stock Exchange, drawn from the population from the year 2012 to 2021. The chosen samples come from the manufacturing sector of the country. However, it is stated that the pharmaceuticals firms were chosen based on information available about the corporate governance procedures and activity performance of Bangladesh's listed pharmaceuticals firms. A final sample of 30 firms is selected.

4.2. Definition of Operational Variables

Table 1 independence, audit committee independence, auditor's opinion, sponsor directors ownership, and foreign shareholders, sales growth, firm size, profitability, and liquidity were among the exogenous variables. While financial distress was the only endogenous variable (FD).

4.3. Research Method

For measuring the impact of corporate governance variables on financial distress in Bangladesh, the study used panel data estimation. Panel techniques such as FGLS methods were used to analyze the data to test the relationship.

4.4. Model Specification

Descriptive statistics and regression analysis are used in this study to demonstrate statistical significance and dependencies, as well as to assess the relationship between the independent factors and financial distress with and without control variables.

Basic Model:

$$FD_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BIND_{it} + \beta_3 BDIVE_{it} + \beta_4 AS_{it} + \beta_5 AIND_{it} + \beta_6 AO_{it} + \beta_7 INSO_{it} + \beta_8 FORO_{it} + \beta_9 IND0_{it} + \beta_{10} FS_{it} + \beta_{11} FA_{it} + \beta_{12} PROF_{it} + \beta_{13} SGW_{it} + \beta_{14} LR_{it} + \varepsilon_{it}$$

Where,

i =1; 2; 3…….30 n = 30 (companies)

t = 2012…….2021 t = 10 (years)

$\varepsilon_{it} = v_{it} + u_{it}$

FD = Financial distress	AO= Auditor's opinion	PROF= Profitability
BS= Board Size	INSO= Institutional ownership	SGW= Sales growth
BIND= Board independence	FORO= Foreign shareholders	LR= Liquidity
BDIVE= Board diversity	INDO= Individual ownership	
AS= Auditor size	FS= Firm size	
AIND= Audit committee independence	FA= Firm age	

ε_{it} is the random error term, with v_{it} capturing the unobserved firm-specific effect and u_{it} being independently identically distributed (i.i.d), ε_{it} N(0, σ^2).

Model-1:

$$FD_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Table 1: Definitions and expected sign operationalized variables

Variables	Symbolic code	Measurement	Expected sign	Source	References
Financial Distress	FD	The original Z score model for public limited manufacturing firms by Altman is: $Z=1.2\ X_{1+}1.4\ X_{2+}3.3\ X_3+0.6\ X_{4+}1\ X_5$ Where, X_1 – working capital over total assets (WC/TA) X_2 – retained earnings over total assets (RE/TA) X_3 – earnings before interest and tax over total assets (EBIT/TA) X_4 – market capitalization over total liabilities (MVC/TL) X_5 – sales over total assets (S/TA) Criteria: A company is financially distressed if its Z score ranges<1.8; While, companies having a Z-score between 1.81 and 2.99 is categorized in a grey area (in a crisis) company, and importantly having a Z Score>2.99 is categorized as in the safe zone.	N/A	Annual Report	(Altman, 1968; 2013; Altman et al., 2014; Altman et al., 2017; Boďa and Úradníček, 2016; Calandro, 2007; Dell, 2017; Desiyanti et al., 2019; El Khoury and Al Beaïno, 2014; Hamid et al., 2016; Hauschild, 2013; Hayes et al., 2010; Imelda and Alodia, 2017; Lubawa and Louangrath, 2016; Mahama, 2015; Swalih et al., 2021).
Board Size	BS	Determine the total number of directors on the board.	±	Annual Report	(Shah, 2016)
Board independence	BIND	The proportion of total independent directors to total directors on the board.	-	Annual Report	(Ali and Nasir, 2018)
Board Diversity	BDIVE	The number of female members of the board of directors	±	Annual Report	(Yousaf et al., 2021)
Audit committee Size	AS	The number of members of the audit committee	±	Annual Report	(Udin et al., 2017)
Audit committee Independence	AIND	The proportion of total independent audit committee members to total number of members of the audit committee.	±	Annual Report	(Salloum et al., 2014)
Auditor's opinion	AO	The nature of the opinion i.e., qualified or unqualified received by the firm and is represented by dummy variable which takes the value of 1 if firm receive unqualified audit report, 0 otherwise.	-	Annual Report	(Tsai et al., 2009)
Institutional Ownership	INSO	$\frac{Share\ held\ by\ institutions}{Total\ no\ of\ share\ outstanding}$	-	Monthly Review	(Manzaneque et al., 2016)
Foreign Ownership	FORO	$\frac{\text{Share held by } Foreign\ Shareholder}{\text{Total no of share outstanding}}$	-	Monthly Review	(Gul et al., 2010)
Individual (public) Ownership	INDO	$\frac{\text{Share held by } public}{\text{Total no of share outstanding}}$	-	Monthly Review	(Khan et al., 2011)
Firm Size	FS	Logarithm of Total Asset	-	Annual Report	(Ahmad and Adhariani, 2017)
Firm Maturity	FA	Logarithm of Firm Age	+	Author's construction	(Akpinar and Akpinar, 2017)
Profitability	ROA	Net income after tax divided by Total Asset	±	Annual Report	(Atosh and Iraya, 2018)
Sales Growth	SGW	Calculated by subtracting current year sales from previous year sales and dividing by previous year sales	±	Annual Report	(Younas et al., 2021)
Liquidity	LR	Current Asset is divided by Current Liability	+	Annual Report	(Andualem, 2011)

*Legend: Author's Construct=an established structure is utilized to collect data from the concerned company's annual reports from 2012 to 2021, and an unweight approach is used to calculate the index value; Annual Report=Yearly published reports from 2012 to 2021; Monthly Review=A monthly published reports by Dhaka Stock Exchange (DSE) from 2012 to 2021; WDI=World Development Indicator

Model-2:

$$FD_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-3:

$$FD_{it} = \beta_0 + \beta_1 BDIVE_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-4:

$$FD_{it} = \beta_0 + \beta_1 AS_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-5:

$$FD_{it} = \beta_0 + \beta_1 AIND_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-6:

$$FD_{it} = \beta_0 + \beta_1 AO_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-7:

$$FD_{it} = \beta_0 + \beta_1 INSO_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-8:

$$FD_{it} = \beta_0 + \beta_1 FORO_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-9:

$$FD_{it} = \beta_0 + \beta_1 INDO_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 PROF_{it} + \beta_5 SGW_{it} \beta_6 LR_{it} + \varepsilon_{it}$$

Model-10:

$$FD_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BIND_{it} + \beta_3 BDIVE_{it} + \beta_4 AS_{it} + \beta_5 AIND_{it} + \beta_6 AO_{it} + \beta_7 INSO_{it} + \beta_8 FORO_{it} + \beta_9 IND0_{it} + \beta_{10} FS_{it} + \beta_{11} FA_{it} + \beta_{12} PROF_{it} + \beta_{13} SGW_{it} + \beta_{14} LR_{it} + \varepsilon_{it}$$

5. ANALYSIS AND FINDINGS

5.1. Descriptive Statistics

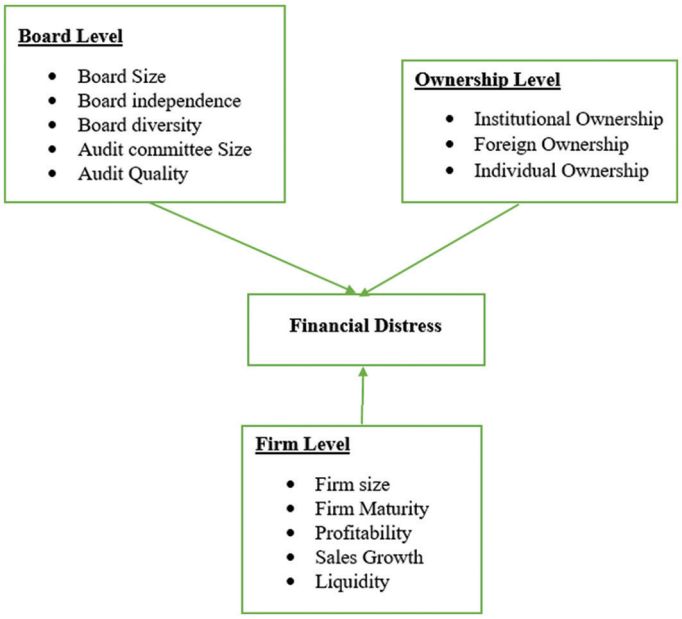
Table 2 displays the descriptive data obtained following a winsorizing technique. The Table 2 provides a summary of statistical measures for the variables. The number of observations is 278. In the study, it is found that the minimum value of FD is 0.08. Whereas, the maximum value observed is 2.98. It refers that a firm by obtaining a FD score of more than 2.99 could prevail in the safe zone. The average FD value is 7.590 which refers that most of the company's financial condition is healthy. The standard deviation is 0.083, indicating the variability of the FD score. In the governance variable, the minimum number of board size, board independent, and board female members is 5.00, 1.00, and 0.00; whereas the maximum value is 11.00, 9.00, and 4.00; on average the value consist of 7.37, 2.21, and 1.60; and standard deviation is 1.86, 1.60 and 1.33 indicating moderate variability. The minimum number of audit committee size, independent members and opinion is 1.00, 1.00 and 0.00; the maximum is 5.00, 3.00, and 1.00; and on average consist of 3.63, 1.47, and 0.85. The standard deviation is 0.84, 0.63, and 0.85, indicating relatively low variability. In the ownership variable, INSO, FORO, and INDO has a minimum holding of ownership is 0.01, 0.00, and 0.01; a maximum holding of ownership is 0.38, 0.24, and 0.69; and on average type hold the ownership of 0.17, 0.03, and 0.34. The standard deviation is 0.11, 0.07, and 0.19 indicating moderate variability. In the firm-level variable TA, FA, PROF, SGW, and LR have the minimum value observed is 8.13,

Table 2: Descriptive statistics

	n	Min	Max	Mean	SD
FD	278	0.08	2.98	0.83	0.69
BS	278	5.00	11.00	7.37	1.86
BIND	278	1.00	9.00	2.21	1.60
BDIVE	278	0.00	4.00	1.60	1.33
AS	278	1.00	5.00	3.63	0.84
AIND	278	1.00	3.00	1.47	0.63
AO	278	0.00	1.00	0.85	0.36
INSO	278	0.01	0.38	0.17	0.11
FORO	278	0.00	0.24	0.03	0.07
INDO	278	0.01	0.69	0.34	0.19
TA	278	8.13	10.70	9.51	0.67
FA	278	0.78	1.74	1.39	0.26
PROF	278	−0.09	0.41	0.08	0.10
SGW	278	−0.67	2.18	0.13	0.53
LIQ	278	0.12	11.38	1.72	2.28

Source: Author's construction. Legend: Where, FD: Financial distress, BS: Board size, BIND: Board independence, BDIVE: Board diversity, AS: Audit committee size; AIND: Audit committee independence, AO: Auditor's opinion, INSO: Institutional ownership, FORO: Foreign shareholders, INDO: Individual ownership: FS: Firm size, FA: Firm maturity, PROFL: Profitability, SGW: Sales growth, LR: Liquidity

Figure 1: Conceptual model



Source: Author's construction

Table 3: Pearson's correlation

Variables	FD	BS	BIND	BDIVE	AS	AIND	AO	INSO	FORO	INDO	TA	FA	PROF	SWG	LIQ
FD	1.000														
BS	0.197	1.000													
	(0.001)														
BIND	0.165	0.237	1.000												
	(0.006)	(0.000)													
BDIVE	0.070	0.194	0.367	1.000											
	(0.246)	(0.001)	(0.000)												
AS	0.009	0.204	0.323	−0.140	1.000										
	(0.881)	(0.001)	(0.000)	(0.019)											
AIND	0.182	−0.153	−0.025	0.010	0.070	1.000									
	(0.002)	(0.011)	(0.673)	(0.865)	(0.242)										
AO	−0.039	0.046	−0.004	−0.119	0.061	0.183	1.000								
	(0.515)	(0.442)	(0.941)	(0.048)	(0.312)	(0.002)									
INSO	−0.214	−0.025	−0.088	−0.016	−0.166	−0.013	−0.029	1.000							
	(0.000)	(0.682)	(0.145)	(0.786)	(0.006)	(0.834)	(0.626)								
FORO	0.086	0.144	−0.046	−0.010	0.163	−0.172	0.191	0.006	1.000						
	(0.152)	(0.016)	(0.443)	(0.864)	(0.007)	(0.004)	(0.001)	(0.919)							
INDO	−0.283	−0.352	−0.344	−0.336	−0.331	−0.160	0.016	−0.057	−0.282	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.787)	(0.342)	(0.000)						
TA	−0.233	0.114	−0.019	0.021	0.358	0.138	0.163	0.270	0.394	−0.310	1.000				
	(0.000)	(0.057)	(0.749)	(0.722)	(0.000)	(0.021)	(0.006)	(0.000)	(0.000)	(0.000)					
FA	0.133	0.076	0.221	0.279	−0.017	0.032	0.033	0.096	0.389	−0.275	0.357	1.000			
	(0.029)	(0.211)	(0.000)	(0.000)	(0.775)	(0.596)	(0.588)	(0.114)	(0.000)	(0.000)	(0.000)				
PROF	0.594	0.086	0.102	−0.069	0.132	0.164	0.108	−0.177	0.231	−0.276	−0.008	−0.101	1.000		
	(0.000)	(0.155)	(0.089)	(0.250)	(0.028)	(0.006)	(0.072)	(0.003)	(0.000)	(0.000)	(0.890)	(0.098)			
SGW	0.106	0.008	0.008	0.013	0.013	0.067	−0.017	0.036	0.131	0.016	0.157	0.069	0.081	1.000	
	(0.079)	(0.895)	(0.901)	(0.832)	(0.834)	(0.268)	(0.772)	(0.555)	(0.029)	(0.796)	(0.009)	(0.258)	(0.179)		
LIQ	−0.013	−0.073	0.071	−0.099	0.073	−0.170	0.010	−0.047	0.054	0.032	0.141	−0.145	0.116	0.051	1.000
	(0.833)	(0.224)	(0.238)	(0.099)	(0.224)	(0.004)	(0.868)	(0.438)	(0.372)	(0.590)	(0.019)	(0.017)	(0.053)	(0.393)	

Source: Author's construction. Legend: Where, FD: Financial distress, BS: Board size, BIND: Board independence, BDIVE: Board diversity, AS: Audit committee size, AIND: Audit committee independence, AO: Auditor's opinion, INSO: Institutional ownership, FORO: Foreign shareholders, INDO: Individual ownership, FS: Firm size, FA: Firm maturity, PROF: Profitability, SGW: Sales growth, LR: Liquidity

Table 4: Variance inflation factor

Variables	VIF
LNTA	2.097
INDO	1.861
AS	1.858
FORO	1.842
BIND	1.761
LNFA	1.71
BDIVE	1.577
AIND	1.422
PROF	1.397
BS	1.382
INSO	1.265
LIQ	1.2
AO	1.198
SGW	1.069
Mean VIF	1.546

Source: Author's construction. Legend: Where, FD: Financial distress, BS: Board size, BIND: Board independence, BDIVE: Board diversity, AS: Audit committee size, AIND: Audit committee independence, AO: Auditor's opinion, INSO: Institutional ownership, FORO: Foreign shareholders, INDO: Individual ownership, FS: Firm size, FA: Firm maturity, PROF: Profitability, SGW: Sales growth, LR: Liquidity

0.78, −0.09, −0.67, and 0.12 respectively. On the other hand, the maximum value observed is 10.7, 1.74, 0.41, 2.18, and 11.38. And, the standard deviations indicating moderate variability.

5.2. Bivariate Correlation

A correlation coefficient is a statistical instrument that indicates the tendency of two or more variables to fluctuate together. The correlation coefficient between FD and BS, BIND, BDIVE is "0.197, 0.165, and 0.070" as seen in Table 3. The correlation coefficient between FD and AS, AIND, AO is "0.009, 0.182, −0.039," the correlation coefficient between FD and INSO, FORO, INDO is "−0.214, 0.086, −0.283," the correlation coefficient between FD and TA is "−0.233," the correlation coefficient between FD and FA is "0.133," the correlation coefficient between FD and PROF is "0.594," the correlation coefficient between FD and SGW is "0.106," the correlation coefficient between FD and LR is "−0.013." The correlation coefficient has a higher tendency between FD and ROA of "0.594" and a lower tendency between BS and INDO of −0.352. Table 3 shows that there is no evidence of multi-collinearity in the data set. Additionally, the P-values provide information about the statistical significance of the correlations.

Table 5: Wooldridge test for autocorrelation in panel data

F (128)	14.44
Prob>F	0.0007

Source: Author's construction

Table 6: Breusch-pagan/cook-weisberg test for heteroskedasticity

Chi^2 (1)	29.95
Prob>Chi-square	0.0000

Source: Author's construction

5.3. Variance Inflation Factor (VIF)

In Table 4, for each variable, the table shows the Variance Inflation Factor (VIF). A high VIF indicating the possibility of multicollinearity. The average VIF is 1.546, showing a moderate amount of multicollinearity across the variables. However, the fact that none of the VIF values exceed a threshold of 10 which indicates that multicollinearity is not a major worry in the regression model with these variables.

5.4. Test for Autocorrelation

Table 5 shows the Wooldridge test for autocorrelation in panel data is used to detect whether the model residuals include first-order autocorrelation. The test statistic (F-statistic) is 14.44, and the F-distribution has a degree of freedom of (128). A P = 0.0007 corresponds to the F-statistic. it can be reasonably conclude that the model exhibits first-order autocorrelation because the P = 0.0016) is much lower than 0.05.

5.5. Test for Heteroskedasticity

Table 6 illustrates the Breusch-Pagan (BP) and Cook-Weisberg tests are applied. The Chi^2 statistic's low P-value (e.g., 0.05) provides strong evidence that the model is substantially heteroskedastic. As a result, the study must use FGLS to resolve this problem.

5.6. Regression Model

The FGLS analysis yielded the following results, which are shown in Table 7. Model 10 is the main model depicted. Model 10, examined the impact of corporate governance variables on financial distress. This study ascertains a significant positive relation between board size and financial distress which refers that firms with large board size are less probable to face financial distress which is consistent with Kalbuana et al. (2022); Agustina and Anwar (2021); Datta (2018); and Nasution (2007). The study discovers a negative relation between board independence and financial distress which refers that firms with an appropriate portion of independent directors are less likely to declare bankruptcy. This findings is aligned with Daily and Dalton (1994), Elloumi and Gueyié (2001), Hambrick and D'Aveni (1992). Moreover, the table determines a significant negative relation between board diversity which refers that an appropriate participation of female directors are less likely to face distress that is aligned with the findings of (Loukil et al., 2019). Further, audit committee size and audit committee independence are positively associated with financial distress which refers that firms with a high share of audit committee member and independent member are less likely to declare bankruptcy. This findings is aligned with Beasley and Salterio (2001), and Chen (2008). Further, the results

Table 7: FGLS regression outcomes

FD	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6	Model-7	Model-8	Model-9	Model-10
BS	0.076***									0.081***
	(0.017)									(0.018)
BIND		0.013								−0.027
		(0.02)								(0.024)
BDIVE			0.019							−0.019
			(0.024)							(0.027)
AS				0.057						0.011
				(0.039)						(0.046)
AIND					0.137***					0.172***
					(0.05)					(0.054)
AO						−0.082				−0.087
						(0.073)				(0.072)
INSO							−0.335			−0.272
							(0.296)			(0.298)
FORO								−0.655		−0.402
								(0.539)		(0.571)
INDO									−0.659***	−0.426**
									(0.178)	(0.208)
TA	−0.431***	−0.374***	−0.377***	−0.41***	−0.399***	−0.365***	−0.364***	−0.358***	−0.425***	−0.471***
	(0.052)	(0.053)	(0.053)	(0.057)	(0.052)	(0.054)	(0.054)	(0.055)	(0.053)	(0.065)
FA	0.842***	0.817***	0.819***	0.869***	0.855***	0.835***	0.837***	0.894***	0.737***	0.908***
	(0.125)	(0.135)	(0.135)	(0.131)	(0.128)	(0.13)	(0.13)	(0.137)	(0.13)	(0.146)
PROF	3.895***	4.133***	4.158***	4.087***	4.006***	4.215***	4.09***	4.281***	3.776***	3.549***
	(0.311)	(0.319)	(0.317)	(0.319)	(0.318)	(0.321)	(0.322)	(0.333)	(0.326)	(0.345)
SGW	0.126**	0.119**	0.115**	0.123**	0.112*	0.115**	0.119**	0.122**	0.14**	0.13**
	(0.056)	(0.058)	(0.058)	(0.058)	(0.057)	(0.058)	(0.058)	(0.058)	(0.057)	(0.055)
LIQ	0.007	0 (0.014)	0.001	0.001	0.01	0.001	0 (0.014)	0.002	0.005	0.021
	(0.013)		(0.014)	(0.014)	(0.014)	(0.014)		(0.014)	(0.013)	(0.014)
Constant	2.873***	2.888***	2.906***	2.981***	2.897***	2.854***	2.851***	2.655***	3.748***	3.19***
	(0.451)	(0.471)	(0.469)	(0.468)	(0.462)	(0.471)	(0.471)	(0.516)	(0.508)	(0.548)
Number of observation	278	278	278	278	278	278	278	278	278	278
F-test	49.474	42.885	42.966	43.462	45.219	43.173	43.173	43.236	47.266	24.166
Prob>F	0	0	0	0	0	0	0	0	0	0
R-squared	0.529	0.494	0.495	0.497	0.507	0.495	0.495	0.496	0.518	0.57

Legend: Where, FD: Financial distress, BS: Board size, BIND: Board independence, BDIVE: Board diversity, AS: Audit committee size, AIND: Audit committee independence, AO: Auditor's opinion, INSO: Institutional ownership, FORO: Foreign shareholders, INDO: Individual ownership, FS: Firm size, FA: Firm maturity, PROF: Profitability, SGW: Sales growth, LR: Liquidity. ***P<0.01, **P<0.05, *P<0.1

found an insignificant negative relation between audit opinion and financial distress which refers that firms with a high share of qualified opinion are more likely to declare bankruptcy. This findings is aligned with (Darmayanti, 2017). Additionally, the results found a negative relation between institutional ownership and financial distress which refers that firms with a less share of institutional ownership are less likely to have a risk of bankruptcy. This is supported by the findings of Mangena and Chamisa (2008). Furthermore, the results found a significant negative relation between foreign ownership and financial distress which refers that firms with a high portion of foreign ownership are less likely to have a risk of bankruptcy. This findings is contrasting with Md-Rus et al. (2013) and consistent with (Jensen and Meckling, 2019).

However, the impact of firm level variables as firm size, firm age, profitability, sales growth, and liquidity appears with positive and significant effect on financial distress. This findings is aligned with (Abdullah et al., 2009; Ahmad and Adhariani, 2017; Chancharat, 2008; Elloumi and Gueyié, 2001; Wangige, 2016).

Some additional analyses have been created to evaluate the robustness of the results in model 10. Yet, the results remain consistent, indicating that the diverse conditions prevalent in the models have no effect on business failure in this scenario.

6. CONCLUSION

The current research examines how corporate governance attributes affect financial distress. The FGLS approach was employed to quantify the impact of corporate governance on financial adversity. As previously stated, in this study, the magnitude of the financial distress indicator (Z-Score) was assessed, and the direct effect of board size, board independence, board diversity, audit committee size, auditor independence, auditor opinion, institutional director ownership, foreign shareholders, and public ownership on the financial distress indicator was estimated. A positive influence of board variables on the financial distress indicator has been identified, implying that having a large number of board variables in a firm reduces the probability of financial distress in Bangladesh. Furthermore, the favorable coefficient of ownership metrics indicates that effective corporate practices act as a catalyst in Bangladesh, actively and proactively managing to reduce the risk of financial distress. However, our findings have specific constraints. Scholars contend that incorporating additional corporate governance parameters would enhance the reliability and generalizability of the results. In upcoming times, researchers could integrate additional governance elements into the corporate governance indicator. These elements might encompass executive compensation, various board committees, the presence of female directors, and similar aspects. Future academics are also invited to investigate the correlation between risk management and techniques of corporate governance.

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APPENDIX-1

Authors	Period of study	Country/ region	Method used	Major findings
Haque et al. (2014)	2004 to 2005	Bangladesh	OLS	The findings show a significant unfavorable connection between the caliber of corporate governance and both overall and long-term debt ratios.
Farooque et al. (2007)	1995 to 2002	Bangladesh	2-SLS	According to the findings there exists an inverse link between board ownership and performance as per the OLS estimate. This implies that elevated board ownership diminishes firm value and vice versa. And, in the performance equation, the outcomes obtained through 2-SLS yield a completely contradictory inference concerning board ownership. In this case, there is an absence of substantial impact of board ownership on performance.
Zhang and Cang (2021)	2010 to 2017	Latin America	logit model	The empirical findings reveal a contrary correlation between ownership concentration and audit demand solely in the cases of Uruguay and Peru. Foreign-owned enterprises and local private-owned firms with minority foreign ownership, on the other hand, there is a strong probability of undergoing auditing across all nations in the sampled dataset.
Miglani et al. (2015)	1999 to 2003	Australia	logit regression model	Certain corporate governance procedures are helpful to organizations, as indicated by a lower chance of financial trouble, according to the research. They also discover that the voluntary embrace of particular corporate governance frameworks results in decreased levels of financial distress, as opposed to financial distress identification driving changes in structural corporate governance.
Chenchehene (2019)	2009-2016	UK	multivariate logistic regression model	The share of independent directors, which has a significant and positive link with financial difficulty, is also considerably and positively associated to board size, according to the study.
Datta (2018)	2010 to 2016	Bangladesh	Multiple linear regression	The data show that board size and ROE, as well as board meetings, have a positive association. Furthermore, the findings demonstrate a negative link between ROE and board composition.
Rashid (2011)	-	Bangladesh		Many characteristics of the Bangladeshi context, according to this study, correspond to the German-Japanese model.
Shahwan (2015)	2008	Egypt	logistic regression model	According to the findings of the study, the mean CGI score suggests that the quality of corporate governance practices in Egyptian-listed firms is moderately insufficient. The outcomes do not corroborate a link between CG practices and financial performance. Furthermore, CG practices have a modest inverse link with the incidence of financial trouble. The present research also demonstrates that firm-specific features can be utilized as a first-pass screening tool to predict firm performance and financial difficulty.
Ernawati et al. (2018)	2016	Indonesia	logistic regression model	The model's variables, according to the research findings, encompass current liabilities to total assets, total liabilities to total assets, book-to-market value, sales to total assets, and earnings before interest and taxes to total assets. The audit opinion variable, on the other hand, has no statistical significance. Although not all of the factors within the model displayed significance, the variables lacking statistical significance were still incorporated into the model to enhance the precision of the predictive model.
Khan et al. (2011)	2003 to 2005	Bangladesh	OLS	For public stockholders, they discover a negative but statistically insignificant link.
Novi Darmayanti (2017)	2010 to 2014.	Indonesia	logistics regression	The independent variable of audit opinion, according to the study's findings, influences auditor switching. Auditor switching is unaffected by financial crisis, client company size, management turnover, or firm size.
Liang et al. (2020)	1995 to 2016	Taiwan	2SLS	The data reveal that, while the CEO/Chairman duality may not generate financial distress, greater managers' equity pledge ratios (shareholding percentages by board members and insiders) positively (negatively) associated with financial trouble.