"Impact of Bankruptcy Risk on Reporting Delay: An Empirical Evidence from Engineering Industry in Bangladesh"

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ABSTRACT

The connection between bankruptcy risk and reporting timeliness by companies has significant effects on stakeholders' decision-making process. And the purpose of this study is to investigate and comprehensively understand the direct influence of bankruptcy risk on reporting timeliness within the context of the engineering industry of Bangladesh. Considering the sample of 42 listed engineering firms over the period of 2016-2022, including 231 firm-year observation, it is evident that higher bankruptcy risk increased the chance of delayed reporting whereas the degree of high liquidity, debt, and cumulative profitability had the opposite effect. It also indicate that financial determinants that affect the goodwill of the annual report have a significant impact on reporting timeliness. By examining the relationship empirically, the study aims to shed light on how the heightened risk of bankruptcy faced by listed engineering firms in Bangladesh affects their ability to meet established reporting deadlines. Which ultimately contribute to the broader understanding of corporate financial challenges, information transparency, and stakeholder expectations.

Keywords: Bankruptcy risk, corporate reporting, Altman's Model, Reporting timeliness, Engineering firm, Bangladesh

INTRODUCTION

In the dynamic environment of modern corporate governance, the timely reporting of accurate financial information is a crucial part of accountability and transparency. However, A company's core activities can be seriously disrupted by the risk of bankruptcy as businesses experience liquidity problems and negotiate the challenging path toward potential insolvency.

The connection between bankruptcy risk and reporting timeliness by companies is discussed in the accounting and management of any business, mainly because it has significant effects on stakeholders' decision-making. In addition to being a great concern for businesses, bankruptcy has severe social and economic effects. (Wu, 2010). Risk information of companies may not be completely revealed or understood in financial statements, which could lead stakeholders to make negative conclusions. (Linsley and Shrives, 2006). Additionally, previous research has shown that businesses in financial distress may be driven to cover up the underlying reasons behind their underperformance (Whittred and Zimmer, 1984). Therefore, it is still crucial to research the connection between financial distress, risk, and the timing of financial reporting.

Even within the legislative framework of the European Union, a definite consensus has not yet been reached despite more than six decades of scholarly work focused on developing a bankruptcy theory (Boon, 2018).

However, industry experts generally agree that liquidity, leverage, and profitability are the three most important variables that affect bankruptcy risk.

These traits are frequently employed in models for bankruptcy prediction. (Tascón Fernández and Gutiérrez,

2012) As a result, these elements may greatly affect the way how financial information is disclosed.

Generally, the information revealed can be explained by two opposing notions. More information is required from the perspective of external users, although the kind of information required may vary based on the informational requirements of the stakeholders. Perhaps some information will particularly benefit certain users not for others. (Inchausti 1997). On the other hand, internal users (management) is unwilling to disclose specific types of information because of competitive concerns. The agency theory involves this user conflict of interest related to the need for financial reporting, specifically information asymmetries. (Healy and Palepu 2001). When management and investors have conflicting interests and key information is not revealed, the agency problem occurs (Jensen and Meckling 1976). For example, in a bankruptcy case, both the creditors and the debtors want to maximize their profits. In these situations, there may be a trade-off among the stakeholders in a firm about information delays (Lukason 2019). Various research studies have been conducted as an evidence that a large number of insolvent companies experienced delays in disclosing their financial statements before bankruptcy. (Lawrence 1983). Furthermore, failure was significantly predicted by delays in issuing financial accounts, and these delays may have been signs of financial distress (Ahmed and Courtis 1999). There could be several causes for delaying report submission. According to Altman et al. (2010, p. 17), the failure to file financial reports on time may be a deliberate managerial choice made by struggling businesses to avoid disclosing negative information, or even the outcome of a disagreement between external auditors and directors over the "true and fair view" of annual report. Late reporting of statements is linked to worse credit ratings that leads to an increase in information asymmetries with external users (Leventis 2006), and, generally, is a technique to reduce the quality and scope of stakeholders' decision-making. This has direct negative effects on privately owned businesses (Singhvi and Desai 1971). As a result, governments typically impose standards to maintain minimum disclosure for all businesses by charging penalties if those standards are not met (Lukason 2019).

Through this in-depth investigation it is evident that there are significant difficulties faced by businesses that face the possibility of bankruptcy in trying to find a balance between the requirements of financial reporting and the complex system of issues associated with financial distress. So concentration should be on the necessity for a strategic approach that coordinates financial improvement activities with prompt and open reporting. By doing this, businesses can improve stakeholder communication, and lessen the negative effects of delayed reporting.

Background of the Study

The engineering sector is essential to the development of infrastructure, innovation, and technical progress in the world's economies. Engineering firms do, however, confront financial hardships that might have an impact on their sustainability, just like any other industry. The capacity to timely and accurately disclose financial information through reporting is one essential component of financial soundness. To evaluate a company's financial performance, make wise decisions, and allocate resources efficiently, stakeholders must get timely and transparent information. When there is a bankruptcy risk, when there are financial difficulties and the possibility of insolvency, the reporting process becomes especially important. Because of this, the relationship between bankruptcy risk and timely reporting has significant effects on all parties involved, from investors and creditors to regulatory organizations.

In the context of the engineering industry, where project-driven dynamics, complex supply chains, and diverse revenue streams prevail, the relationship between bankruptcy risk and reporting timeliness remains a critical and understudied concern. While the interplay between financial distress and timely reporting holds significant implications for stakeholders, there is a notable gap in empirical research that examines this relationship within the specific context of engineering firms of Bangladesh.

Existing studies on bankruptcy risk and reporting timeliness predominantly generalize findings across

industries, potentially overlooking the unique challenges and intricacies inherent to engineering companies. The distinct financial structures, operational models, and industry-specific factors that characterize the engineering sector can introduce variations in how bankruptcy risk impacts reporting practices.

Furthermore, the empirical exploration of this relationship remains limited, leaving a dearth of sector-specific insights and evidence-based conclusions. A focused examination of the engineering industry is necessary to understand the factors contributing to reporting delays under the shadow of bankruptcy risk, offering guidance to companies, regulators, and stakeholders navigating this complex landscape.

So the main objective of this study is to assess the extent of reporting delays in the engineering sector when businesses are at risk of bankruptcy. By considering factors unique to the sector as well as variables like liquidity, profitability, debt, etc., the study also aims to find the traits most strongly associated with reporting delays.

LITERATURE REVIEW

In many countries, the need to reduce the informational gap between well-informed and less-informed stakeholders motivates disclosure regulation (Skinner 1993). Accounting information is necessary for overall decision-making process in business and could influence stakeholders' decisions and forecasts. (Botosan 1997). Agency theory considers the choice of accounting policy and disclosures to mitigate the conflict of interest between firms and their stakeholders (Smith and Watts 1992).

Therefore, one of the key characteristics to ensure relevance of financial information, according to international accounting regulation, is timeliness or non-delayed display (according to IASB 2010 conceptual framework). Over the years, numerous research studies have investigated the factors influencing reporting delay. These studies generally aimed to explore the connections between reporting delay and various factors such as company size, financial risk, fiscal year-end timing, affiliation with multinational corporations (MNCs), type of audit opinion, and other variables (Yesmin and R.M.M 2013).

The timeliness of the financial statements reporting could be affected by a variety of factors, like presence of unfavorable information that might affect the ability to get debt financing. Sometimes, the delay turns into a warning indicator of potential bad performance. Economically challenged companies may not prefer to disclose their terrible situations when there was risk of insolvency (Elliott 1982). As a result, they may not get more financial fundings from various sources if they faced losses in previous accounting periods. Companies that are in financial difficulties are more inclined to manipulate their financial communication. This concept is founded on the agency theory perspective through asymmetric information, under the concept of selective disclosure by Darrough and Stoughton (1990) in the context of financial distress. Strong evidence suggests that businesses that have suffered losses are less likely than other businesses to disclose information (Ajinkya et al. 2005). The reporting delay may be a practice used by managers to conceal negative news, according to the obfuscation theory (Clatworthy and Jones 2003). Studies showing that managers tend to share positive results in shorter time but delay the disclosure of negative outcomes as much as possible is illustrated by the research (Kross 1982). To determine whether the risk of bankruptcy and its primary determinants were connected with reporting delays, they relied on theories of selective disclosure and obfuscation. They also summarized the results from the relevant literature (Lukason 2019).

Siddique and Khan (2003) evaluated the factors that affect delaying external audit completion in Bangladesh. The study's findings suggest that affiliation with an MNC and the 31 December book closing date are important factors influencing audit delays in Bangladesh. According to this study, organizations audited by audit firms with worldwide affiliations have shorter audit delays and the size of the companies is positively, not considerably, associated with audit delay. On the other hand, the study has also identified a few more factors, including the existence of a governance element, a risk factor, and financial performance,

which may also provide insight into the causes of audit delay in Bangladesh (Yesmin and R.M.M. 2013).

In New Zealand, (Courtis 1976) found no correlation between reporting delay and corporation size, age, shareholder number, or length of an annual report. The study discovered a negative correlation between actual profit and reporting delay. In Malaysia, Ashton, Willingham, and Elliott (1987) evaluated the relationship between 14 factors and audit delay. They have carried out both univariate and multivariate analyses for this objective. Additionally, according to their analysis, firm size has a positive correlation with audit delay for non-public companies but a negative correlation with audit delay for public companies. On the other hand, the delay in the audit is strongly correlated with net loss (Yesmin and R.M.M. 2013).

Based on an extensive dataset comprising 558 annual reports spanning the fiscal year 1998-1999, Dr. Kamran Ahmed (2003) conducted an assessment of the promptness of corporate financial reporting in Bangladesh, India, and Pakistan—three South Asian nations. In this study, the size of the audit firm, the company year-end, the financial situation (defined by profitability, degree of debt, and liquidity), and the company size were utilized to evaluate the audit delay. This study demonstrates that for Bangladesh, the size of the company, the size of the audit firm, and the financial health of the company have very little bearing on the length of the audit. On the other hand, the audit delay is significantly impacted by the corporate year-end. It shows that because most businesses operating in Bangladesh have the same year-end date (often in December or June), audit firms have to undergo a lot of pressure to finish the audit process by that date. As a result, audit firms take longer to complete the audit process and as a result, a reporting delay happens (Yesmin and R.M.M. 2013).

Corporate financial distress causes reporting delays. The determinants of financial trouble must be considered (Impink et al. 2012). Indeed, research on identifying the early warning signals of the financial crisis has been revived in light of the enormous number of bankrupt businesses during the global recession in 2009 brought on by the international credit investigation. (Geambasu et al. 2013). Research indicates that the most useful ratios for predicting bankruptcy are those that measure profitability, liquidity, and leverage specifically (Scott 1981; Laitinen 1991;Lukason and Laitinen 2019). As a result, following hypotheses are considered while taking into account reporting delays, leverage, annual and cumulative profitability, and bankruptcy risk. (Du Jardin 2015)

Hypotheses Development

Reporting Delay: The term "reporting delay" often refers to the duration of time between the conclusion of a financial period and the formal reporting or disclosure that is necessary to comply with legal requirements. The term "timeliness" can indicate more than the occurrence of a delay in the reporting of financial statements from a regulatory deadline. It was defined by McGee (2006) as the time between the end of the company's fiscal year and the publication date of the financial report. According to Whittred (1980), the number of days between the end date of the financial statement and the date the external auditor's report is signed counts as an audit delay

Liquidity and Reporting Delays: Prior research has shown that bankrupt businesses typically have issues with liquidity (Lukason and Laitinen 2019). According to Laitinen and Suvas (2016), it is a type of technical insolvency where enterprises are unable to pay their present debts. Accordingly, the firm's liquidity affects the likelihood of bankruptcy (Scott 1981), and empirical research show that greater liquidity lowers the likelihood of failure (Bunn and Redwood 2003). As a result, businesses with liquidity issues could be reluctant to disclose their precarious position. This leads to the first hypothesis, which is as follows:

Hypothesis-1 (H1). The higher the liquidity of the firm, the lower the likelihood of delayed reporting.

Profitability and Reporting Delays: Annual and accumulated profitability are typical indicators of

financial distress (Lukason and Laitinen 2019). According to another research, the profitability ratio is an important predictor of failure before distress occurs. Additionally, profitable businesses have been shown to delay their annual reports less frequently (Dogan 2007). The profitability measures the capability of the business to manage the assets efficiently and create enough funds to pay its financial obligations, making it relevant for bankruptcy prediction models. Theoretically, increasing profitability should decrease the likelihood of struggling and failing (Chiaramonte and Casu 2017). Previous research on this timeliness indicator has shown that delayed reporting means lower profitability (Luypaert et al. 2016). Although the results are not completely definitive, submission delays are frequently associated with losses for the time, meaning that organizations reporting losses are likely to have greater reporting delays than those reporting profits (Ismail and Chandler 2004). As a result, expecting the connections between annual accumulated profitability and reporting delays to be as follows:

Hypothesis-2 (H2). The higher the cumulative profitability, the lower the chance of delaying annual reporting.

Bankruptcy Risk and Reporting Delays: Empirically, it has been demonstrated that financially troubled firms may delay reports (Altman et al. 2010). The most of the relevant research, however, used reporting delay as an independent variable, concentrating on the ideal duration of the delay period to use to predict future failure. Such a setup is fair for forecasting purposes because many distressed corporations do not report at all (Lukason 2013). Many hypotheses, including the theories of selective disclosure explain why distressed corporations might begin delaying reporting. However, there is little empirical support for these theoretical hypotheses (Darrough and Stoughton 1990). One research study used Belgian companies as an example and a 1982 distress risk model to find certain evidence that a longer reporting delay is caused by a higher distress risk (Luypaert et al. 2016). Practically speaking, it makes sense that distressed businesses could want to delay informing their stakeholders of bad news, say, to prevent a decline in bank loans and trade credit or a loss of customers (Lukason 2019). As a result, predict the following relationship with the previous hypothesis:

Hypothesis-3 (H3). The higher the bankruptcy risk, the higher the chance of delaying annual reporting

THEORETICAL BACKGROUND

Agency Theory

This theory highlights the principal-agent relationship between company management (agents) and stakeholders (principals). As financial reporting serves as a communication tool between agents and principals, agency theory suggests that reporting timeliness can be influenced by the varying interests and incentives of these parties. In the context of bankruptcy risk, the theory emphasizes the importance of transparent and timely reporting to align the interests of stakeholders and mitigate potential agency conflicts.

Stakeholder Theory

This theory asserts that companies have a responsibility to satisfy the interests of various stakeholders beyond shareholders, including employees, customers, suppliers, and the community. Reporting timeliness becomes a mechanism through which a company fulfills its obligations to stakeholders by providing them with accurate and timely information. Bankruptcy risk introduces heightened stakeholder concerns, making timely communication essential to maintain trust and minimize negative impacts.

Legitimacy Theory

Legitimacy theory posits that companies seek to maintain their social and ethical legitimacy by aligning

their actions with societal norms and expectations. Reporting timeliness serves as a tool to demonstrate the company's commitment to transparency and accountability. Under bankruptcy risk, maintaining legitimacy becomes crucial, as stakeholders' perceptions of the company's ethical behavior can significantly influence their decisions.

Incorporating these theoretical perspectives provides a comprehensive framework for investigating how bankruptcy risk shapes reporting timeliness in the engineering industry. By analyzing the interplay of these theories within the context of empirical evidence, the study seeks to contribute to a deeper understanding of the intricate dynamics that influence financial reporting practices in times of financial distress.

RESEARCH METHODOLOGY

Sampling and data collection

For this study, Data is collected from the engineering companies that are registered on the Dhaka Stock Exchange. Secondary data from annual reports, posted on their websites, are used to get the relevant data. The relevant data, occasionally unavailable in the annual reports, is sourced from the Dhaka Stock Exchange and Lanka Bangla website. For certain years, when yearly reports are unavailable on company websites, data is acquired from sources like Amarstock, investing.com and others. Within the engineering industry on the Dhaka Stock Exchange, there are 42 listed active companies. Consequently, the data collection encompasses selected engineering industry annual reports, online platforms, articles, websites, and research papers. This study specifically utilizes data from 42 companies from 2016 to 2022. It's important to note that limitations are present due to unavailable information on particular company websites, a point recognized as one of the study's constraints. The research involves 42 companies and encompasses a sample period of 262 years.

Context of the Study

Based on information from 2016 to 2022 about the entire population of the engineering industry of Bangladesh. The end period was the year 2022 because there were no submission dates for subsequent years when the analysis was being done There were 231 firm-year observations in the analysis. More than 95% of the population of active listed companies in the engineering industry were covered by the data for the majority of the analyzed years, but our database lacked financial data for a fraction of the firms due to the unavailable annual report.

According to Bangladesh Securities and Exchange Commission, all companies, except life insurance companies, are required to have their annual financial statements audited within 120 (one hundred twenty) days of the end of their fiscal year. Then, a copy of these audited financial statements needs to be submitted to the Commission and the stock exchange within 14 days. The legislation is comparable to those of other countries where relevant research has been done, such as Belgium (7 months; Luypaert et al. 2016) and the United Kingdom (9 months) (Clatworthy and Peel 2016). Since we know the financial year-end date and the actual signing date of the audit for each firm, we can determine the precise duration of the audit delay.

Variables of the Study

Table 1 includes all of the definitions and formulas for the variables along with an explanation for each one. There are several accessible proxies for timeliness because the term "timeliness" can indicate more than the occurrence of a delay of reporting of financial statements from the occurrences of delay. It was described by McGee (2006) as the time gap between the end of the company's fiscal year and the date financial report publication (Lukason, 2019). According to Dyer and McHugh (1975), the number of days between the date of the balance sheet and the date the external auditor's report is signed counts as an audit delay. According

to Soltani (2002), the financial statement issue delay is defined as the number of days between the date of the balance sheet and the date on which annual general meeting was held (Lukason, 2019). Since the sample firms were mostly non-audited listed companies, here considered a general approach to determining the delay, i.e., if firms exceeded the 120 days of audit report signed. With such a broad definition, the results can be used to inform future applications (i.e., within 120 days following the fiscal year; coded with 0), and whether it caused the submission to be delayed (by at least one day; coded with 1). This variable's name is DELAY in the analysis that follows.

Table 1. Defining the variables

Dependent/Independent Variables			**Control Variables**
Variables	**Definition**	**Variables**	**Definition/ Calculation**
REA	Retained Earnings/Assets	SIZE	Natural logarithm of assets
EBITA	Earnings before interest and taxes/ assets	AGE	Age (years) at the end of fiscal year
WCA	Working capital/total assets		
MVETD	The market value of equity/ debt		
Z-SCORE	Score from Altman Z score		

There were 159 delayed observations and 72 non-delayed observations in the dataset. To determine the independent variables (i.e., financial ratios and bankruptcy risk) from the same report, all firms who had delayed had at some point still submitted their delayed reports. When coding the variable DELAY, took into account another possibility. First, using DELAY in a continuous form is problematic because, for firms that are not delayed, management is free to select a date that satisfies legal requirements. As a result, firms that submit immediately following the fiscal year are unjustifiably more accurate than those after 120 days.

Here Altman et al. (1968) study used to code the independent variables. The formulas are as follows: (a) working capital (i.e., current assets minus current liabilities) to current liabilities (WCR) reflecting liquidity (b) retained earnings to assets (REA) reflecting cumulative profitability; and (c) market value of equity to total debt (MVED) although there are several ratios available to analyze these financial variables.

METHODOLOGY OF THE STUDY

The dependent variable log of DELAY was used to evaluate the hypotheses. REA, EBITA, WCA, and MVETD were the four independent variables used to evaluate hypotheses from H1 to H3. The log values of audit delay have been used to ensure linearity among data. Given that the variable ZSCORE was computed using the other three independent variables, which would cause major multicollinearity problems, the testing of hypotheses H1 to H3 were divided into two sets of models. Two more sets of models were created after Models 1 and 2 served as the basis models without control variables to examine how the other characteristics of the businesses represented with two control variables (firm size and age) changed the results.

The models assessed with either log regression (dependent variable DELAY) were as follows (i denote firm and t period):

Model 1: $Delay_{it} = b0 + b1 \times REA_{it} + b2 \times EBITA_{it} + b3 \times WCTA_{it} + b4 \times MVETD_{it} + E_{it}$

Model 2: $Delay_{it} = b0 + b1 \times REAit + b2 \times EBITAit + b3 \times WCTAit + b4 \times MVETDit + b5 \times SIZEit + b6$

× AGEit + Eit

Model 3: $Delay_{it} = b0 + b1 \times ZSCORE_{it} + E_{it}$

Model 4: $Delay_{it} = b0 + b1 \times ZSCORE_{it} + b2 \times Size_{it} + b3 \times Age_{it} + E_{it}$

FINDINGS AND ANALYSIS

Descriptive statistics

All firms are categorized into two types. Non-delayed firms finish their audit within 120 days and the delayed firm takes more time than 120 days.

Table:2 non-delayed firms: (Firms that complete within 120 days)

Variable |	Obs	Mean	Std. Dev.	Min	Max
ZSCOR|	149	2.493901	1.67157	-1.947461	8.1674
Delay |	149	98.75243	33.66119	48	120
WCR |	149	2.07223	0.6849594	-0.2168922	3.69766
REA |	149	0.771097	0.3854619	-1.972528	1.967771
EBITA |	149	0.0774839	0.1049074	-0.1059739	0.9908847
MVEL |	149	4.534678	5.682776	0.0158246	15.76341
Age |	149	30.71141	17.16348	6	70

In the case of non-delayed firms, who finish their audit within time, the average z score is 2.49. we know that a z score of more than 3 indicates good financial health. The mean value of the working capital ratio is also good (2.07>2). The mean value of delay is 98 days where minimum delay is found within 48 days only. The market value of the equity to total debt ratio is 4.53 which ranges from the minimum value of 0.0158246 and a maximum value of 15.7653. The mean value of firm age is 30.71141.

Table: 3 Delayed firms: (Firms that take greater than 120 days)

Variable|	Obs	Mean	Std. Dev.	Min	Max
ZSCORE|	82	0.969419	1.349391	2.994203	4.346022
Delay |	82	169.5244	56.83748	121	305
WCR |	82	.4964767	4.05898	.1395917	4.98278
REA |	82	.2998444	.5208677	.7068484	2.863651
EBITA |	82	.0747367	.1352102	.2359902	1.057536
MVEL |	82	3.801316	6.616577	.0006082	10.48521
firmage |	82	25.41463	11.9184	12	55

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Table 2 lists the descriptive statistics of the variables of non-delayed firms. As can be shown, non-delayed companies had better financial positions than delayers in table-3 because their WCA, EBITA, REA, and MVETD means were greater in the case of non-delayed firms. Additionally, the ZSCORE obtained lower mean scores for delayed business, pointing to a larger probability of insolvency. These findings agree with earlier research, e.g., Abdulla (1996), Courtis (1976), Owusu-Ansah (2000). Four models were formulated that are represented in following tables 4 and 5 with their respective marginal effects and multicollinearity statistics (VIF).

Regression Analysis

A regression model with dependent variable (log of Delay) and financial ratios (working capital ratio, retained earnings to asset ratio, market value of equity to total debt ratio) as independent variables:

Table-4: Regression model with financial ratios and dependent variable

Model-1.1 (without control variables)						
Number of obs = 231						
F (4, 226) = 34.05						
Prob > F = 0.0000						
R-squared = 0.3760						
Adj R-squared = 0.3650						
Root MSE = .7747						
Delay |	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	VIF
REA |	-0.85231	0.130835	-6.51	0	-1.7046 -.594496	1.33
EBITA|	0.242504	0.441448	0.55	0.583	-.6273756 1.112384	1.01
WCR |	-0.12176	0.023168	-5.26	0	-0.2435 -.0761066	1.61
MVEL |	0.010139	0.010056	1.01	0.314	-.0096757 .0299537	1.41
_cons |	4.867812	0.068998	70.55	0	4.73185 5.003773	

In this case, "Prob > F" is 0.0000, which is very close to zero. A low p-value (close to zero) suggests that the model as a whole is statistically significant. An R-squared value of 0.3760 indicates that approximately 37.60% of the variability in the dependent variable is explained by the independent variables in the model. An adjusted R-squared value of 0.3650 indicates that the model accounts for 36.50% of the variability in the dependent variable, adjusted for the number of independent variables.

Table-5: Regression model with financial ratios and dependent variable with control variable

Model 2 (with control variables)						
Number of obs = 231						
F (6, 224) = 24.70						
Prob > F = 0.0076						
R-squared = 0.3982						
Adj R-squared = 0.3821						
Root MSE = .76421						
Delay	|Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	VIF
REA	|-.929753	.1358574	-6.84	0.000	-1.197475 -.662031	1.47
EBITA	|-.0414785	.4471974	-0.09	0.926	-.9227307 .8397737	1.07

WCR	|-.1334508	.0234616	-5.69	0.004	-.1796845 -.0872171	1.7
MVEL	|.0175848	.0120653	1.46	0.146	-.0061912 .0413608	2.08
Age	|-.0096544	.0034175	-2.82	0.005	-.016389 -.0029198	1.13
F_Size	|.0363429	.0409323	0.89	0.376	-.0443188 .1170045	1.07
_cons	|4.365038	.9131937	4.78	0.000	2.565488 6.164587	

In this case, "Prob > F" is 0.0000, which is very close to zero. A low p-value (close to zero) suggests that the model as a whole is statistically significant. An R-squared value of 0.3982 indicates that approximately 39.82% of the variability in the dependent variable is explained by the independent variables in the model. An adjusted R-squared value of 0.3821 indicates that the model accounts for 38.21% of the variability in the dependent variable, adjusted for the number of independent variables.

Models 3 and 4 (as illustrated in Table 4) demonstrated an increase in the probability of firms exceeding the legal reporting deadline due to an increased bankruptcy risk, which aligned with the prior correlation in Hypothesis 3. This findings are consistent with the notion that companies facing financial distress might possess motivations to conceal the underlying causes of their bad performance (Whittred and Zimmer 1984). In line with the obfuscation theory, it is probable that managers endeavor to obscure instances of failure (Courtis 1998; Clatworthy and Jones 2003). Managers are inclined to disclose the positive news (Haw et al. 2000), whereas enterprises incurring losses tend to delay the disclosure of their outcomes (Kross 1982).

Companies having weak performance engages in manipulaton of financial data because of agency problem and information asymmetry. This alignment is consistent with proposition of selective disclosure in the context of financial distress (Darrough and Stoughton's (1990).

Strong evidence states that companies incurring losses display a lower tendency to divulge information compared to their competitor firms (Ajinkya et al. 2005). These viewpoints stand in contrast to the hypothesis provided by Skinner (1994) and Skinner (1997), which suggests that companies may also be motivated to promptly disclose unfavorable news to decrease legal expenses. This latter argument could be more applicable to publicly traded firms under substantial pressure from capital markets.

Table: 6 Two regression models with independent variable (Bankruptcy risk) and dependent variable (DELAY).

Number of obs = 231				
F (1, 229) = 58.68				
Prob > F = 0.0000				
R-squared = 0.2040				
Adj R-squared = 0.2005				
Root MSE = .86927				
Delay|	t	[95% Conf. Interval]		VIF
ZSCORE|	-7.66	-.0843389	-.0498277	1.00
_cons|	67.27	4.815796		

In this case, "Prob > F" is 0.0000, which is very close to zero. P value lower than 0.05 suggests that the model as a whole is statistically significant. An R-squared value of 0.3982 indicates that about 39.82% of the variability in the dependent variable is predicted by the independent variables. An adjusted R-squared value of 0.3650 indicates that the model accounts for 38.21% of the variability in the dependent variable, adjusted for the number of independent variables

Table-7: Regression table including firm age and firm size

Model 2.2 (Firm age and firm size) control variables included		
Number of orbs = 231		
F (3, 227) = 20.69		
Prob > F = 0.0000		
R-squared = 0.2147		
Adj R-squared = 0.2043		
Root MSE = .86719		
Delay |	t	[95% Conf. Interval]
ZSCORE |	-7.88	-0.1412
Age |	-1.17	-.0117763 .0030095
Fsize |	-1.11	-8.54e-12 2.39e-12
_cons |	37.3	4.869061 5.412231

In this case, "Prob > F" is 0.0000, which is very close to zero. A lower p-valu(less than 0.05) suggests that the model as a whole is statistically significant. Here, R-squared value is 0.2147 which indicates that approximately 21.47% of the variability in the dependent variable is explained by the independent variables in the model. An adjusted R-squared value is 0.2043 which indicates that the model accounts for 20.43% of the variability in the dependent variable, adjusting the number of independent variables.

Hypothesis Testing

Hypothesis testing at 5% significance level

Table-8 Hypothesis testing:

Variables	Coefficient	P value	P<0.05	Result	Relationship
Audit Delay					
Z score	-.070586	0.0076	Yes	Null hypothesis rejected	Negative relationship
Liquidity	0.133	0.004	Yes	Null hypothesis rejected	Negative relationship
Accumulated Profitability	-.929753	0.000	Yes	Null hypothesis rejected	Negative relationship
Firm size	-0.00307	0.244	No	Null hypothesis accepted	No relation
Firm age	-.004383	0.269	No	Null hypothesis accepted	No relation

Here, the first hypothesis was the relationship between liquidity and audit delay. Analysis proves that there is a negative relationship with the working capital ratio. Similarly, the second hypothesis is also met, and a negative relationship has been found. It indicates that financial determinants that affect the goodwill of the annual report have a significant impact on reporting timeliness. Consequently, higher bankruptcy risk (close to zero) indicates the worse condition of the business and that can affect the reporting timeliness.

Correlation Matrix

Table-9: Correlation Matrix:

	|ZSCORE	Delay	Fsize	Age	WCR	REA	EBITA	**MVEL**
ZSCORE	|1.0000							
Delay	|-0.4516	1.0000						
Fsize	|-0.2830	-0.0518	1.0000					
Age	|-0.1719	-0.0017	0.0745	1.0000				
WCR	|0.8468	-0.5082	-0.0278	-0.1928	1.0000			
REA	|.5468	-0.5418	0.1332	-0.1954	0.4857	1.0000		
EBITA	|0.1618	-0.0006	-0.0519	-0.2299	0.0449	0.0505	1.0000	
MVEL	|0.8801	-0.2538	-0.4664	-0.0878	0.5235	0.3443	0.0962	1.0000

The correlation matrix represents the relationship between dependent variables (Delay) and independent variables. From the matrix, it can be told that there is a negative relationship existed between z score and audit delay (-.4516), firm size (-0.2830), and firm age (-0.0208). Similarly, there is a positive relation with the working capital ratio (-0.0278), REA (0.5468), EBITA (0.1618), and MVEL. Because these formulas are used to determine the z score.

multi-collinearity test

Table: 10

Variable	VIF	1/VIF
Firm age	1.06	0.944076
Firm Size	1.06	0.944544
ZSCORE	1.05	0.950719
Mean VIF	1.06	

The table represents the Variance Inflation Factor (VIF) of the independent variables. Here, the mean value is 1.06, which means there are no multicollinearity problems in this study. Similarly, the mean coefficient of independent variables ranges between 1 to 10. So, we can conclude that the research does not have multicollinearity problems and any biasedness.

FINDINGS

In summary, it can be said that managers' decisions regarding the timeliness of financial reporting are influenced by the financial health of their businesses. According to Altman et al. (2010), a company that faces a significant bankruptcy risk may delay or withhold financial reporting because management may attempt to conceal poor performance. Particularly when financial situation is poor (Merkl-Davies and Brennan 2007), managers may opportunistically exploit the information in annual reports and choose to delay or even avoid sharing negative information.

Further analysis of the factors that influence bankruptcy risk, including liquidity, profitability, and leverage, revealed various degrees of impact on timely reporting. Companies with weak liquidity showed more significant reporting delays, supporting the idea that liquidity issues can make it challenging to obtain the precise financial data needed for reporting.

While still considerable, profitability had less of a consistent impact on the sample as a whole in terms of reporting timeliness.

CONCLUSION

This research aimed to evaluate the relationship between the timeliness of financial reporting, the risk of bankruptcy, and various financial factors (such as liquidity, leverage, and profitability) in the context of Bangladeshi firms (engineering sector) around 262 firm-year observations during the period of 2016 to 2022. And the research revealed that while higher bankruptcy risk increased the chance of delayed reporting whereas the degree of high liquidity, profitability, and cumulative profitability had the opposite effect. Delayed reporting was not connected to leverage. The latter findings were true whether the dependent variable was the simple presence of a delay or its severity. These findings suggest that strong businesses tend to furnish their official financial data within the stipulated time, potentially showcasing their credibility to stakeholders. Consequently, failing businesses engages in distortion of their financial information. Furthermore, the study identified additional determinants for timely submission of financial statements including factors such as company size and age, in specific industries.

This study provides evidence-based insights into reporting delays under bankruptcy risk, focusing on to what extent its affect listed engineering firms in Bangladesh economy. And empirical studies on the relationship between bankruptcy risk and reporting timeliness in the engineering industry are needed for robustness and comprehensive understanding. But this study had certain limitations because it used single industry and single country to do the research work which limits its implication in other country context in different industries. This study did not mention the causes for delaying reporting as well as the consequences of reporting delay on the stakeholders' decision making. That could be the avenues for future research.

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