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The Way Financial Distress Affects Financial Reporting Delay

***Pramesari Dinar Nurquran**[1] **Ardianto**[1]
[1]Accounting Department, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia
Correspondence*:
Address: Jl. Airlangga No.4-6, Surabaya, Jawa Timur, Indonesia, 60286 | e-mail: pramesaridinar@gmail.com

Abstract

Objective: Previous studies identified a significant effect of financial distress experienced by a company on the delay in submitting its audited financial report. However, no analysis to identify whether the effect is direct or indirect by decomposing the total effect calculated. This study conducted further analysis aiming to reveal the mechanism of the way financial distress affects financial reporting delay, whether the effect is entirely direct or there is a portion of indirect effect, by decomposing the total effect using the quality of financial report as a mediating factor.
Design/Methods/Approach: Public companies listed at Indonesian Stock Exchange (IDXI), whichever delay in submitting audited financial reports were targeted population, the purposive sampling method was implemented to collect financial reports within the 2014-2020 period. Logistic regression, linear regression, and a technique to decompose the effect into four components under the mediation model are analysis methods. In addition, the quality of the financial report measured by the Beneish Score was used as a mediator variable.
Findings: This study found that the more severe the financial distress experienced by a company, the more likely it will delay submitting its audited financial report. Although there is an indication that financial distress affects the quality of the financial report, however no significant evidence that the quality of the financial report mediates some of the effects of financial distress on financial reporting delay. In other words, the effect of financial distress is direct.
Originality: This study delivered new insight by including financial reporting quality as a potential mediating variable in the relationship between financial distress and financial reporting delay. The existence of mediating variable allowed us to decompose the total effect of financial distress on the financial reporting delay and identify whether financial distress's effect on financial reporting delay is direct or indirect. The identification of direct and indirect effects will reveal the mechanism of how financial distress effects affect financial reporting delay. The researchers expected to add new insight, where the use of financial reporting quality as a mediating variable was expected to reveal the mechanism of the relationship between financial distress and financial reporting delay. This study evaluates the relationship between financial distress experienced by companies, financial reporting quality, and financial reporting delay.
Practical/Policy implication: The findings of this study suggest that investors have to be more careful in investment decision-making on public companies that delay submitting their audited financial reports, and regulators have to strengthen protection for investors.

Keywords: Decomposition, Financial distress, Reporting delay, Mediation model

JEL Classification: G33, M41

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1. Introduction

Both public and private companies are required to prepare financial reports periodically in a systematic manner. Public companies" financial reports should be available and could be accessed by the public, such as financial analysts, investors and bankers. Meanwhile, private companies are not required to submit and disclose their financial reports to the public as the managing authority of Bursa Efek Indonesia (BEI), PT Bursa Efek Indonesia (PT BEI), has issued a regulation requiring listed companies to submit audited year-end financial reports no later than three months after the report's date. Financial reports submitted to the public or publication of financial reports is part of implementing information disclosure principles to the public. Implementing information disclosure principles aims to protect investors or creditors who have invested or plan to invest in the company.

Several factors can cause public companies to delay submitting or publishing their audited financial reports. Violation of the rules regarding submitting audited financial reports following the deadline will be subject to sanctions, including administrative penalties, fines, termination or suspension of trading for company shares. Even though some clear rules and penalties will be imposed, some companies still break them by submitting their financial reports after the deadline. PT BEI imposed sanctions on 104 companies between 2014 and 2020 for failing to promptly submit their audited year-end financial reports.

In addition to issues on the relationship between financial distress and delay in the publication of audited financial reports, the relationship between the quality of financial reports and delay in the publication of audited financial reports is also a concern of stakeholders because financial reports are one of the main sources of information for making decisions. Some studies revealed that financial distress experienced by a company is one of the major causes of delay in submitting its audited financial reports (Lukason and Camacho-Miñano, 2019; Merdekawati and Arsjah, 2011; and Whittred and Zimmer, 1984). The delay in submitting audited financial reports is also influenced by other factors that the studies have identified, such as company size (asset size), corporate governance, audit opinion, debt ratio, earnings quality, the reputation of public accounting firms (big four public accounting firms) who audit the reports (Atiase et al., 1989; Merdekawati and Arsjah, 2011; and Rahmawati, 2018).

A company's earnings are frequently related to the quality of financial reports being evaluated. Findings of several studies regarding the relationship between financial reports quality and delays in the publication of financial reports showed that earnings quality is one of the factors that influence delay in submitting financial reports (Rahmawati, 2018); late submission of financial reports has an inverse relation with earnings quality (Asthana, 2014); financial reporting delays are significantly associated with poor earnings quality; and low quality of financial report information is caused by delays in reporting audited financial reports (Cao et al., 2016 and Knechel and Payne, 2001). Even though public companies tend to have higher quality financial reports than private companies, the degree of information quality in the public company financial reports that have been delayed varies.

It is very important to protect interested parties, investors and creditors on the companies, especially listed public companies. The purpose of the protection is to maintain the parties' trust so that they remain interested in supporting and investing in Indonesian companies. Several factors that can reduce trust in a company include delays in submitting financial reports, lack of financial report quality and experiencing financial distress. Thus it is very important to conduct a study on this topic to support the protection mechanism designed by the authorized entity. Studies on the relationship between financial distress and delay in the publication of audited financial reports showed that the relationship is statistically significant. Likewise, studies on the relationship between the quality of financial reports and delay in the publication of audited financial reports showed that the relationship is statistically significant. However, there is still no answer from previous studies on whether a company's efforts to prepare financial reports with poor quality mediated delay in the publication of financial reports caused by financial distress. Hence this is our identified research gap. To have the answer, we conducted the study to analyze the relationship between the three factors simultaneously. Our study revealed that the way financial distress affects delay in the publication of audited financial reports is not entirely direct (direct effect). However, a mediation mechanism exists for financial reporting quality (indirect effect).

The objective of this study is first to find out the effect of financial distress experienced by public companies listed at BEI on delays in the publication of audited financial reports; and, secondly, to investigate a mechanism of financial distress experienced by the company in influencing delay in the publication of audited financial reports by using financial reporting quality as a mediator variable. The first objective is to confirm the findings of previous studies, which indicate that financial distress is a significant cause of delays in the submission of financial reports for the targeted population. The second objective is to conduct further research on the relationship between delays in the publication of audited financial reports and financial distress. The questions to be answered in this study were whether the financial distress experienced by a company causes delays in submitting financial reports and whether the quality of financial reports mediates the relationship between financial distress and delay in submitting financial reports. We estimated logistic regression by maximum likelihood estimator (MLE) to address the first question, and we estimated linear regression by ordinary least square estimator (OLS) and logistic regression to decompose the total effect of financial distress in mediation analysis to address the second question

This study analyzed the effect of financial distress on financial reporting delay differently than previous studies. The mediation model estimated in this study, apart from showing the direction and significance of the effect of financial distress on reporting delay, also revealed how financial distress affects reporting delay. Previous studies have not evaluated how financial distress affects reporting delays. Our study makes several vital contributions in theoretical, practical, and policy aspects. First, we provide additional evidence to develop the obfuscation theory. When a company experiences financial distress, the management will try to cover up bad news by distorting the company's financial reports information, which will drive delays in the publication of audited financial reports. Second, we advise the company's management on the necessity to comply with rules on submitting audited financial reports on time, such that the company delivers a signal to stakeholders that the company is not experiencing financial distress. Third, advise PT BEI to compose preventive policies by considering significant factors that affect the company's delay in publishing its financial reports.

The remainder of this article is organized as follows. The literature review of this study and the research hypotheses are discussed and proposed. Then, the research method is described. Finally, a section on data analysis results and discussion is provided, followed by the conclusion.

2. Literature Review and Hypotheses Development

Financial Distress and Financial Reporting Delay

Hope et al. (2013) showed that public companies generally have better financial reporting quality than private companies. The quality of public company financial reports can decrease if the company tends to carry out earnings management as a result of management practices or if demand for their financial information decreases. Even though a company's financial reports appear to be of high quality, this does not necessarily mean that the company is not experiencing financial distress. Financial distress shows the company's inability to meet its debt obligations as agreed with the debtor. Several measures can be used to predict the degree of financial distress experienced by a company, such as the Altman Z-Score model or the magnitude of the company's leverage ratio.

Several studies have strengthened the notion that a company's financial condition can affect the time it takes to submit financial statements. Ross et al. (2019) explained that a company attracts debt to maintain liquidity, fund operational or investment activities, and obtain profits by reducing tax costs (tax shield). However, if a company with a debt ratio that is too high, so that it can no longer meet its debt obligations by the debt contract by paying principal instalments and interest on the debt, it is experiencing financial difficulties (financial distress), which can lead to bankruptcy. Financial distress, or the amount of debt a company bears, is allegedly related to the delay in submitting financial reports.

Merdekawati and Arsjah (2011) showed that debt ratio is one of the factors causing companies to be late in submitting their financial reports. Research by Meinarsih et al. (2018) on public companies in Indonesia engaged in the manufacturing sector showed that increasing the likelihood of companies going bankrupt will cause audit delays and delays in the publication of financial statements. Nova et al. (2019) essentially showed the same result, the greater probability of company failure, the slower submission of financial reports. Some of research findings in Indonesia are consistent with the findings of research conducted outside Indonesia.

Research by Whittred and Zimmer (1984) indicated that companies that experience financial distress are slower in submitting their financial reports than companies that do not experience financial distress. Lukason and Camacho-Miñano (2019) showed that companies with a higher risk of bankruptcy are more likely to delay submitting their annual reports. Escaloni and Mareque (2021) showed a relationship between the likelihood of bankruptcy and audit report lag. Factors related to audit report lag differ depending on whether a company is in the SME category. Other factors identified as influencing factors for audit report lag include company size, auditor, leverage, debt proportion and company age (Abernathy et al., 2017). Based on some previous research findings, there are strong indications that delay in submitting financial reports and financial distress experienced by the company are expected to have a significant relationship. The more severe the financial distress experienced by a company, the company will delay or be late in submitting its financial reports. Therefore, the following hypothesis is tested for this study's target population:

H_1: The increasing likelihood of financial distress will increase the likelihood of companies publishing their financial reports late.

Financial Distress, Financial Reporting Quality and Reporting Delay

If a company is experiencing financial distress, the management may make several efforts to modify financial figures so that the financial reports contain information as if the company is not experiencing financial distress. The efforts made by the management are intended to secure its interests, so it is necessary to distort financial statement information. Companies experiencing financial distress tend to produce financial reports with low information quality (Haji-Abdullah et al., 2016; Yang et al., 2016) because they try to mislead stakeholders regarding the company's actual performance in the hope of attracting more investors and creditors (Tarighi et al., 2022). A financial report containing

information that does not accurately reflect the actual condition of the company's performance is considered poor quality because it gives an impression that the company has no financial issues.

According to Jensen and Meckling (1976), managers will obtain incentives when the company has a high level of leverage by performing earnings management in preparing the company's financial reports. Several studies, one of which was conducted by Gul et al. (2018), supported that statement, which observed that companies experiencing financial distress with higher capable managers engage more in opportunistic financial reporting, maximize equity-based compensation, and overcome debt liability pressures. Performing earnings management can cause delays in the issuance of financial reports. Trueman (1990) explained that when company management performs earnings management to distort financial reports' information, this action takes time and causes delays in submitting financial reports.

Companies that submit their financial reports late can lower stakeholder confidence because it shows that the information in the financial reports is not very accurate or its accuracy is relatively low (Robinson et al., 2015). Asthana (2014) and Knechel and Payne (2001) showed that submitting financial reports is associated with lower-quality financial reports information. According to Cao et al. (2016) and Nurquran (2022), delays in submitting financial reports are related to low quality of financial report information because there is an indication of earnings management activities and high levels of discretionary accruals. Delaying the submission of financial reports is a strategy carried out by management to conceal bad news (Lukason and Camacho-Miñano, 2019). Based on the obfuscation theory, when a company experiences financial distress, management will try to conceal the bad news (Clatworthy and Jones, 2003; Courtis, 1998)

The existence of a relationship between financial distress and delays in the submission of financial reports and between financial distress and financial reporting quality raises a question of whether there is a mechanism that shows a simultaneous relationship between financial distress, financial reporting quality and financial reporting delay. There is room to delay in submitting financial reports, even though they will be subject to sanctions, which will provide time for management to respond to the financial distress that the company is currently experiencing. Response delivered by management is in the form of preparing financial reports by distorting information as if the company can still pay its debts. The process of distorting information will reduce the quality of financial report information. The distortion process will also impact delays in the submission of financial reports due to completion of the audit report will be longer because the verification process by the auditor over recorded transactions will take more time.

Based on the explanation above, the influence of financial distress on financial reporting delay is suspected to be mediated by the quality of financial statement information. If the influence of financial distress is mediated by financial reporting quality, it means that the effect of financial distress on financial reporting delay is not independent. If financial reporting quality mediates the effect of financial distress on financial report delays, then there is some influence of financial distress on financial reporting delay through financial reporting quality. Hence, in this case, financial reporting quality serves as a mediator. In this regard, the hypothesis to be tested is:

H_2: The effect of financial distress on financial reporting delay is mediated by financial reporting quality.

3. Method

This study employed non-experimental quantitative methods using secondary data. Public companies listed at IDX that have been late in publishing their year-end audited financial reports are the target population. A purposive sampling technique was used to select companies that were late in submitting their financial reports within the 2014 – 2020 period. Sixty-four companies were selected as samples, meaning 448 firm years of observational data. Companies that listed their shares after 2014 or delisted within the 2014-2020 period did not meet the criteria to be included as sample companies.

Variables used to answer research questions are financial reporting delay (LATE), probability of financial distress experienced by the company (PD) and financial reporting quality (FRQ). Some control variables also used, namely complexity of business transactions (SIZE), debt burden or leverage (LEV), length of time the company has been operating or firm age (AGE), company's financial performance or change in return on assets (CROA) and reputation of the auditor who audited company's financial reports, is the auditor one of big-four accounting firm or not (BIG4).

The timeliness of submitting audited financial reports is categorized into two groups: audited reports that are submitted Late and audited reports whose submission is Not Late. The LATE is a dummy variable with two possible values. If the audited financial report submitted by a company for a certain period is Late then LATE value is 1, while if it is Not Late then LATE value is 0 (Lukason and Camacho-Miñano, 2019; Luypaert et al., 2016). Within the 2014-2020 data period, a company was at least once Late in submitting its audited financial reports and, for other periods, was Not Late.

Due to significant costs incurred due to bankruptcy, efforts have been encouraged to detect early the possibility of a company going bankrupt. Detecting a company that potentially will be bankrupt is part of a preventive strategy to lessen the impact of bankruptcy. A mathematical model can measure the probability that a company will experience financial distress that could lead to bankruptcy. Hence it is possible to identify the possibility of bankruptcy.

One of the mathematical models that can be used to measure the probability of financial distress is a model developed by Altman et al. (2017), which is also known as the Altman Z-Score model, which this model has been

evaluated in many countries. The model developed by Altman et al. (2017) has four variables in terms of financial ratios, namely working capital/total assets (WCTA), retained earnings/total assets (RETA), EBIT/total assets (EBITTA) and the book value of equity/total liabilities (BVETD). The model was estimated by using a logistic regression model. The form of the Altman model to compute the Z-score value is:

$$Z = 0.035 - 0.495WCTA - 0.862RETA - 1.721EBITTA - 0.017BVET \quad (1)$$

Furthermore, the probability that a company will go bankrupt or experience financial distress can be computed using the following equation:

$$PD = \frac{1}{1+e^{-Z}} \quad (2)$$

if a PD value is close to one, then interpreted that the company is most likely to go bankrupt, so a PD value close to one indicates that the company is in severe financial distress.

Good quality financial information does not distort the real condition of the company's financial performance. Management of the company can distort financial reports information through the earnings management process, reducing the quality of financial reports (Cao et al., 2016; Ranjbar and Farsad Amanollahi, 2018). The financial reports quality (FRQ) can be measured using a model developed by Beneish (1999). The model predicts whether a company manipulated earnings based on the score obtained, often called the M-Score (Zack, 2013). M-Score value is calculated using annual audited financial report data. M-Score value can be calculated using either of two models: model with eight variables and model with five variables. M-Score with eight variables is used to measure FRQ in this study.

Eight variables of the model that are used to calculate M-Score are the Days' Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Sales, General, and Administrative Expenses Index (SGAI), Leverage Index (LVGI) and Total Accruals to Total Assets (TATA). A model with eight variables to calculate M-Score is:

$$M - Score = -4.840 + 0.920\,DSRI + 0.528\,GMI + 0.404\,AQI + 0.892\,SGI + 0.115\,DEPI - 0.172\,SGAI - 0.327\,LVGI + 4.679\,TATA \quad (3)$$

A company is predicted to have manipulated its earnings reported in its financial reports, resulting in its financial reports tending to be of poor quality if the M-Score value ≥ -2.22. The greater the M-Score value, the quality of financial reports is relatively declining.

Data analysis was carried out by estimating the logistic regression and mediation models. A logistic regression model can be used to model dependent variables with two possible values or binary variables (Agresti, 2019). The value of the dependent variable is a response from the observation unit or sample unit in the form of success or failure, healthy or ill, good or damaged, good or poor quality, not late or late, and so on. If the value of dependent variable Y is equal to 1 for response in the form of failure, illness, damaged, poor quality, late and 0 for response in the form of success, healthy, good or good quality, not late, then logistic regression model used to predict the probability that dependent variable Y will have a value equal to 1 or P(Y=1). The following logistic regression model will be estimated to test the hypothesis in this study:

$$LATE = \beta_0 + \beta_1 PD + \beta_2 SIZE + \beta_3 LEV + \beta_4 AGE + \beta_5 BIG4 + \beta_6 CROA + e \quad (4)$$

Where β_0 is an intercept of the regression model, β are coefficients of the regression model. The dependent variable LATE is defined as a delay in publishing financial reports, and the independent variable, PD, is the probability of the company experiencing financial distress. Control variables consist of business transaction complexity (SIZE), leverage (LEV), firm age (AGE), auditor reputation (BIG4), and company financial performance (CROA). Estimation of the logistic regression model was carried out using the maximum likelihood method. The method is not bound by the assumption of normality of data distribution as used by the ordinary least square (OLS) method in estimating the linear regression model. Then, the Wald-test procedure was used to test the significance of the effect of the independent variable on the dependent variable.

The estimated mediation model is used for mediation analysis. Mediation analysis aims to determine how the third variable affects the relationship between the other two variables. Previous studies showed an indication of a relationship between financial distress experienced by a company and the quality of its financial reports. Delay in submitting financial reports due to a company experiencing financial distress is hypothesized to be mediated by the process of preparing poor-quality financial reports, so the quality of financial report information potentially acts as a third variable.

The relationship between the PD variable that affects the LATE variable is written as PD → LATE. A mediating or third variable FRQ can affect the relationship pattern between PD and LATE, where PD affects FRQ. Then FRQ affects LATE, so the relationship pattern becomes PD → FRQ → LATE. MacKinnon et al. (2007) stated that ignoring the existence of the FRQ variable can lead to incorrect conclusions regarding the relationship between PD and LATE. In this case, FRQ is called a confounding variable, or the presence of FRQ variable will increase prediction results of LATE by PD variable. However, it will not alter the relationship between PD and LATE. In this case, FRQ is called the covariate variable, or FRQ variable may alter the form of the relationship between PD and LATE, which is different for each FRQ value. In this case, FRQ is called the moderator variable.

The mediation model estimated in mediation analysis to answer the research question and test the hypothesis is as follows:

$$LATE = \beta_{01} + \beta_{11}PD + \beta_{21}SIZE + \beta_{31}LEV + \beta_{41}AGE + \beta_{51}BIG4 + \beta_{61}CROA + e_1 \quad (5)$$

$$LATE = \beta_{02} + \beta_{12}PD + \beta_{22}FRQ + \beta_{32}PD.FRQ + \beta_{42}SIZE + \beta_{52}LEV + \beta_{62}AGE + \beta_{72}BIG4 + \beta_{82}CROA + e_2 \quad (6)$$

$$FRQ = \beta_{03} + \beta_{13}PD + \beta_{23}SIZE + \beta_{33}LEV + \beta_{43}AGE + \beta_{53}BIG4 + \beta_{63}CROA + e_3 \quad (7)$$

where the intercepts are β_{01}, β_{02} and β_{03}, β_{11} is the coefficient connecting the independent variable PD to the dependent variable LATE without any interaction component, and β_{32} shows the effect of interaction between PD and FRQ on LATE.

Mediation analysis describes the total effect of the PD variable (β11) into indirect and direct effects. The components of indirect effect are β_{13} dan β_{22}, while β_{12} is the direct effect component. VanderWeele (2014) identified four types of causality effects in mediation analysis: controlled direct effect (CDE), showing effects not caused by FRQ or PD.FRQ, reference interaction (INTref) showing effects by PD.FRQ, mediated interaction (INTmed) showing effects of FRQ and PD.FRQ and pure indirect effect (PIE) show the effect of FRQ. Discacciati et al. (2019) developed an application program (computer code) for the STATA software to calculate the four effects that had been identified.

Table 1. Variable Definitions

Variable Name	Variable Definition
PD	The probability of financial distress experienced by the company is measured using a model developed by Altman et al. (2017). If the PD value is close to one, then the company is experiencing in severe financial distress.
LATE	Financial reporting delay is identified based on a letter issued by Indonesian Stock Exchange regarding "Announcement of Submission of Audited Financial Statements". If a company is delayed in submitting its audited financial report for a certain period, then the value of LATE is 1If audited financial report submitted by a company for a certain period is Late then LATE value is 1, otherwise 0.
FRQ	Financial reporting quality is measured using a model developed by Beneish's (1999) model named M-Score. A company is predicted to have manipulated its earnings reported in its financial reports, making its financial reports of poor quality if the M-Score value ≥ -2.22.
SIZE	The business transactions' complexity is measured by the natural logarithm of the company's total assets.
LEV	The debt burden is measured by the leverage ratio calculated by dividing the total debt by the company's total equity.
AGE	Firm age is obtained from measured by the length of time the company has been operating.
BIG4	The reputation of the auditor who audited the company's financial reports. If the company is audited by one of the big-four accounting firms, then the BIG4 value is 1, otherwise 0.
CROA	Company's financial performance or change in return on assets (ROA).

4. Result and Discussion

4.1. Descriptive Statistics

Under the criteria for sample unit and determined data period, the number of data targeted for analysis is 448 firm years. However, data for 25 firm years could not be collected because some companies have not published their audited financial statements for the 2019 or 2020 period. The proportion of uncollected data was 5.6%, quite a small percentage. Hence, values calculated using data from 423 firm-years will not be significantly affected by 25 firm-years uncollected data not included in the calculation of the values. Table 2 summarizes each variable's statistics for the 2014 to 2020 period. The statistics are calculated using raw data and winsorized data.

Table 2. Descriptive Statistics of Research Variables in the 2014-2020 Period

Variable		Data	
		Raw	Winsorized*
Financial Reporting Quality Score (FRQ)	[1]	240.28	1.52
	[2]	-2.48	-2.48
	[3]	3,739.38	18.76
	[4]	7,474.82	-13.79
	[5]	71,849.10	101.10
Financial Distress Score (Z-score)	[1]	18.49	2.29
	[2]	0.09	0.09
	[3]	257.83	6.94
	[4]	-1.06	-0.84
	[5]	5,078.22	34.06
Probability of Financial Distress (PD)	[1]	0.59	0.59
	[2]	0.52	0.52
	[3]	0.20	0.20
	[4]	0.26	0.26
	[5]	1.00	1.00
Complexity of Business Transaction (SIZE)	[1]	28.02	28.02
	[2]	28.08	28.08
	[3]	1.83	1.83
	[4]	21.91	21.91
	[5]	39.57	39.57
Leverage (LEV)	[1]	-34.67	1.39
	[2]	1.11	1.11
	[3]	751.17	4.09
	[4]	15,000.00	-8.51
	[5]	370.57	17.21
Firm Age (AGE)	[1]	31.63	28.93
	[2]	29.00	28.00
	[3]	19.68	12.60
	[4]	6.00	6.00
	[5]	71.00	71.00
Financial Performance (CROA)	[1]	-11.40	-3.92
	[2]	-0.31	-0.60
	[3]	191.32	42.75
	[4]	3,357.43	-193.64
	[5]	959.84	126.19
Reporting Delay (LATE)	[1]**	0.28	0.28
Auditor (BIG4)	[1]**	0.16	0.16

Notes:
n = 423 firm-year
*95% Winsorized
[1] Mean [2] Median [3] Std. deviation [4] Minimum [5] Maximum [1]** Proportion

Numbers in the Raw column indicate that raw data contained extreme or outlier data. Outlier data will significantly impact the results of an analysis that uses average-based as one of inputs because statistics numbers calculated using data containing outlier data will significantly differ from numbers calculated without outlier data. By winsorizing process, the impact of outlier data will be reduced. The winsorizing process carried out is 95% winsorization, where raw data for a variable that contains outlier data smaller than the data at the 2.5% percentile value are replaced with data at the 2.5% percentile value and the data larger than the data at 97.5% percentile value are replaced with data at the 97.5% percentile value. In winsorized data, the impact of outlier data is reduced. Numbers calculated using the winsorized data is shown in winsorized column. As an example, for M-Score variable, average of M-Score value if calculated using raw data is 240.28, however, when it is calculated using winsorized data, the average becomes 1.52.

4.2. Test for Similarity of Distribution and Equality of Median

Data for this study covered the 2014 to 2020 period. The analyzed variables should come from the same distribution, so the analysis is based on a single data distribution. Testing the similarity of population or data distribution is carried out for main research variables with interval or ratio measurement scale, namely the M-Score variable, using winsorized data. Population or data distribution for the PD variable was not tested because its value is limited within intervals 0 to 1. The PD size was calculated using equation (2) from the Z-Score value. Likewise, due to the LATE variable being a dummy variable with a value of 0 or 1, similarity testing of the population or data distribution was not carried out.

To test the similarity of population or data distribution, the equality of median as a measure of data center was also conducted. The similarity of population or data distribution and equality of median was tested using data for two different years, such as 2014 and 2015, 2014 and 2016, and so on. The similarity test of two populations or data distributions was carried out using the Wilcoxon sum-rank test. The hypothesis being tested was that data for the first and second years had the same distribution. The equality of the median was tested using the Mann-Whitney-Wilcoxon test procedure. The hypothesis being tested was that the median for the first-year and second-year data were equal. The results of the test of similarity of population or data distribution and equality of median for FRQ variable are presented in Table 3.

Table 3. Test of Similarity of Distribution and Equality of Median[b] of the FRQ for Two Distinct Years

	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
2014		1,125	0,500	0,500	0,000	0,000	2,644
2015	1,144		1,125	1,125	0,127	0,000	1,554
2016	0,052	-0,898		0,500	0,508	0,536	4.023**
2017	-0,091	-1,068	0,012		0,127	0,134	4.023**
2018	0,600	-0,481	0,534	0,588		0,000	1,572
2019	1,310	0,113	1,197	1,207	0,671		4.246**
2020	1.825*	0,910	1.831*	1.866*	1,360	0,668	

Notes:
numbers below the main diagonal are the Z value for similarity distributions test
numbers above the main diagonal are Pearson Chi-square values for equal medians test
[a]Ho: the two distributions are similar, [b]Ho: the two medians are equal
***sig. α = 1%, **sig. α = 5%, *sig. α = 10%

The test of similarity of the population distribution of the FRQ for paired years showed that only three pairs of years have significant test results. Of the 21 pairs of years tested, only three have significant test results at = 10%, and those are 2014 and 2020, 2016 and 2020, and 2017 and 2020. The test of equality of population median of the FRQ for paired years showed only three pairs of 21 whose test results were statistically significant at = 5%. Those pairs are 2016 and 2020, 2017 and 2020, and 2019 and 2020. These tests showed no general change in the FRQ variable's distribution form and median value during the 2014 to 2020 period. The existence of the similarity of the population distribution of the FRQ variable as one of the main research variables becomes a basis for data analysis that can be performed by combining data from all periods as a single data (pooled data). In this regard, the estimation of a regression model, analysis of the effect and decomposition of the effect to answer research questions was carried out using pooled winsorized data.

4.3. Effect of Financial Distress on Reporting Delay

Identification and evaluation of the effect of financial distress experienced by a company on its delay in publishing financial reports were performed by estimating equation (4). The logistic regression model was used to estimate the equation by considering that delay in publishing financial reports (LATE) as the dependent variable has only two possible values (binary variable). If the financial reports were published late, the value of the LATE variable is 1, and 0 if they

were not published late. The financial distress condition as an independent variable was measured using the probability of distress (PD). In addition, SIZE, LEV, AGE, BIG4, and CROA were used as control variables.

The estimated coefficients of equation (4) are presented in Table 4. The coefficient of the PD variable is 2.1787, and this coefficient value is significant if tested at α = 1%. The PD coefficient has a positive sign. The coefficient of the PD variable indicated that, in general, if a company is experiencing increasingly severe financial distress condition, as indicated by the increasing value of the probability of distress, the company will be more likely to publish its financial reports late with an indication that value of the LATE variable will close to 1. The opposite condition will also be valid that if a company is experiencing financial distress that is getting lighter, as indicated by the value of the probability of distress decreasing, the company will be less likely to publish its financial reports late, as indicated by the value of the LATE variable will close to 0. The effect of the probability of distress on delay in the publication of financial reports shown in this study is in line with the result of studies conducted by Lukason and Camacho-Miñano (2019), Nova et al. (2019), Whittred and Zimmer (1984), and Yen (2013).

Table 4. The Effect of Financial Distress on Reporting Delay

Dependent Var. = LATE	Coefficient	z	P>z
PD	2,1787 ***	3,51	0,000
SIZE	0,0881	1,21	0,226
LEV	0,0002 **	2,12	0,034
AGE	-0,0218 **	-2,26	0,024
BIG4	0,7011 **	2,22	0,026
CROA	-0,0002	-0,39	0,693
constant	-4,5003 **	-2,05	0,040

Notes:
***sig. α = 1%, **sig. α = 5%, *sig. α = 10%

Table 3 also showed that, despite being tested at α = 10%, the coefficient of two control variables, SIZE and CROA, were insignificant. This fact showed that the likelihood of a company publishing its financial reports late due to experiencing financial distress was unaffected by the complexity of its financial transactions (SIZE) or changes in its financial performance (CROA). The magnitude of the company's debt burden or leverage (LEV), length of time the company has been in operation (AGE) and reputation of the auditor who audited the company's financial reports (BIG4) have a significant coefficient when tested at α = 5%.

As is the case with the PD coefficient sign, the LEV coefficient is also positive. The positive sign of the LEV coefficient indicated that if a company has a large debt burden or leverage ratio, it would likely be late in publishing its financial reports for a particular financial distress condition the company was experiencing. The situation can be interpreted that a company with a small debt burden or leverage ratio should be able to submit its financial reports on time. The magnitude of PD is essentially affected by a company's debt. Suppose a company bears a large debt burden. However, if the cash flow the company can generate is insufficient to pay its debt obligations, then its probability of distress will be even greater. The effect of leverage shown in this study was consistent with the result of studies conducted by Merdekawati and Arsjah (2011). However, the results differ from those of studies conducted by Rahmawati (2018) and Rusmin and Evans (2017).

A company that has been operating for a long time and experiencing a particular financial distress condition will be less likely to be late in submitting its published financial reports when compared to a company with younger operating age. This condition was indicated by the sign of the AGE coefficient, which is negative. A public company that has been operating for a long time certainly has a positive image in their industry and for investors, suppliers, contractors, distributors and its customers. A public companies must manage its positive image in order to maintain the trust of stakeholders as mentioned above, where if its positive image fades, it will have an impact on operating activities and financial performance of the company. Compliance with regulations, including timely submission of published financial reports, is part of the company's efforts to manage its established positive image.

PricewaterhouseCoopers (PwC), Ernst & Young (EY), Deloitte and KPMG are the four largest (big-four) companies in the world that provide professional services, such as financial reports auditing for both public and private companies. Due to their international reputation and positive image, the four companies will undoubtedly exercise extreme caution when executing audit procedures and issuing audit reports. The prudence in maintaining their reputation could impact a long time to issue audit reports for a company with increasingly severe financial distress. Whenever the company recorded transactions that were not supported by valid documents or were indicated as an attempt to cover up financial distress that the company was experiencing. The sign of the BIG4 coefficient, which is positive, indicates that for a company experiencing severe financial distress (larger PD), if its financial report was audited by a big-four auditor, the probability of lateness in the publication of financial reports will be greater when compared to a company experiencing lighter financial distress (smaller PD). The effect of auditor qualification or reputation shown in this study was in line with the result of studies conducted by Merdekawati and Arsjah (2011) and Rahmawati (2018).

4.4. Mediation Analysis

The evaluation of the mediation role carried out by the financial reporting quality (FRQ) on the effect of financial distress on delay in submitting financial reports was performed by decomposing the total effect or TE of financial distress. The decomposition process was completed using a computer program written by Discacciati et al. (2019). TE of financial distress will be decomposed into four components. The underlying logic in decomposing the total effect into four components is that if financial distress experienced by a company affects the delay in publishing a financial report, then at least one of the four components is the cause. The four components resulting from the decomposition process are the effect that is not caused by mediation or interaction (controlled direct effect or CDE). The effect caused by interaction but not by mediation (reference interaction or INTref), the effect caused by mediation and interaction (mediated interaction or INTmed), and the effect caused by mediation but not by interaction (pure indirect effect or PIE). The total effect due to interaction is INTref + INTmed, while the total effect due to mediation is INTmed + PIE.

Each component value was calculated by estimating the logistic regression model in equation (6) and the linear regression model in equation (7). Calculate the component values utilizing calculation mechanisms developed by Discacciati et al. (2019), require reference value or referent level (a_0) and actual value or actual level (a_1) for financial distress variable (PD), as well as the value of financial reporting quality variable (M-Score) as a mediator (m). The a_0 value was the average value, the a_1 values were the minimum, median, and maximum values, and the m values were the average and median values.

The result of the estimated equation model (6) is presented in Table 5. Those conditions indicated that information regarding financial reporting quality did not change direction of effect and significance of effect of financial distress on possibility of delay in publication of financial reports. The interaction of financial distress variable (PD) with financial reporting quality (M-Score) was also not significant, which mean that magnitude of effect of financial distress condition being experienced by a company on probability of its lateness in publication of financial reports was relatively unchanged for various levels (values) of financial reporting quality. The inclusion of the M-Score variable did not change the sign of coefficient nor the significance of the effect of the PD variable on LATE variable, previously shown as a result of the estimated equation (4).

Table 5. The Effect of Financial Distress and Financial Reporting Quality on Financial Reporting Delay

Dependent Var. = LATE	Coefficient	z	P>z
PD	1,8791 ***	2,95	0,003
FRQ	0,0134	0,65	0,518
PD X FRQ	-0,0138	-0,47	0,639
SIZE	0,0898	1,27	0,204
LEV	-0,0667 **	-2,14	0,033
AGE	-0,0220 **	-2,18	0,029
BIG4	0,7812 **	2,41	0,016
CROA	-0,0013	-0,52	0,606
constant	-4,3105 **	-2,02	0,044

Notes:
***sig. α = 1%, **sig. α = 5%, *sig. α = 10%

Equation (7) shows the effect of financial distress that a company is experiencing on published financial reporting quality. The result of the estimated equation is presented in Table 6. Financial distress condition has a significant effect on the financial reporting quality prepared by a company when tested at α = 10%. The sign of the BIG4 coefficient is negative and significant when tested at α = 5% indicating that the use of a big-four auditor to audit a company's financial reports will have a positive effect on the quality of the company's financial reports information (the M-Score value is getting smaller). A higher M-Score value indicates lower financial reporting quality. The sign of PD coefficient is positive, which indicated that if financial distress experienced by a company is getting heavier (the PD value is getting bigger), then there will be a tendency for the financial reporting quality published by the company to be lower (the M-Score value is getting bigger). The result of the effect of financial distress on financial reporting quality showed in this study is in line with the study conducted by Haji-Abdullah et al. (2016), Tarighi et al. (2022), and Yang et al. (2016).

The result of estimated equations (4), (6) and (7) showed that there is an effect of financial distress condition on the quality of financial reports and reporting delay. This study hypothesized that financial reporting quality mediates financial reporting delay due to the company experiencing financial distress. The hypothesis shows a sequence of events if a company experiences financial distress. Management of the company tries to compile financial reports to impress the company's financial condition remains good despite a decrease in financial reporting quality, resulting in delays in publishing its audited financial report. If financial reporting quality acts as a mediator for financial distress condition, then the effect delivered financial reporting quality on the financial reporting delay is indirect. The indirect effect is part of the total effect of financial distress in influencing financial reporting delay.

Table 6. The Effect of Financial Distress on Financial Reporting Quality

Dependent Var. = FRQ	Coefficient	z	P>z
PD	8,7927 *	1,82	0,069
SIZE	0,8022	1,48	0,139
LEV	-0,3306	-1,46	0,144
AGE	0,0239	0,32	0,747
BIG4	-5,3967 **	-2,09	0,037
CROA	0,0227	1,06	0,289
constant	-25,4089	-1,56	0,119

Notes:
***sig. α = 1%, **sig. α = 5%, *sig. α = 10%

The result of the decomposition of the total effect of financial distress on financial reporting delay into four components is presented in Table 7. The total effect of financial distress on financial reporting delay for each possible combination value of m, a_0 and a_1 was significant when tested at α = 1% or α = 5%, although with different values, as shown in the TE column. Only one component of four components has a significant effect on financial reporting delay when tested at α = 1% or α = 5%, namely controlled direct effect or CDE component. The CDE component showed a pure direct effect of financial distress condition on delay in the publication of financial reports after removing the effect caused by other factors, namely financial reporting quality (FRQ), business transaction complexity (SIZE), debt burden or leverage (LEV), length of time the company has been in operation (AGE), the reputation of the auditor who audited the financial reports (BIG4) and company's financial performance (CROA).

Table 7. The Decomposition of the Effect of Financial Distress on Financial Reporting Delay and Financial Reporting Quality as a Mediator

Financial Reporting Quality	Probability of Distress		Total Effect [TE]	Decomposition			
Level of the mediator (m)	Referent exposure level (a_0)	Actual exposure level (a_1)		Controlled Direct Effect [CDE]	Reference Interaction [IntRef]	Mediated Interaction [IntMed]	Pure Indirect Effect [PIE]
1.52[a]	0.59[a]	0.26[b]	-0,4673 [0.000]***	-0,4562 [0.000]***	0,0042 [0.816]	-0,0002 [0.988]	-0,0152 [0.443]
		0.52[c]	-0,1237 [0.002]***	-0,1214 [0.002]***	0,0011 [0.790]	-0,0001 [0.900]	-0,0032 [0.446]
		1.00[d]	1,1290 [0.047]**	1,1367 [0.042]**	-0,0048 [0.719]	-0,0221 [0.796]	0,0192 [0.451]
-2.48[c]	0.59[a]	0.26[b]	-0,4673 [0.000]***	-0,4562 [0.000]***	0,0042 [0.906]	-0,0002 [0.988]	-0,0152 [0.443]
		0.52[c]	-0,1237 [0.002]***	-0,1221 [0.001]***	0,0019 [0.856]	-0,0001 [0.900]	-0,0032 [0.446]
		1.00[d]	1,129 [0.047]**	1,161 [0.039]**	-0,029 [0.760]	-0,022 [0.796]	0,019 [0.451]

Notes:
[ ] *p-value*, [a] mean, [b] minimum, [c] median, [d] maximum
***sig. α = 1%, **sig. α = 5%, *sig. α = 10%

Other three components did not have a significant effect, namely the interaction effect component between the financial distress condition factor and financial reporting quality factor when the probability of distress is a_1 [IntRef], mediating and interaction effect component between financial distress condition and financial reporting quality when the probability of distress changed from a_0 to a_1 [IntMed], and pure effect component where financial reporting quality acted as a mediator [PIE]. The PIE component is an indirect effect of financial distress condition on financial reporting delay mediated by financial reports with poor information quality. The insignificant effect of IntMed and PIE components means

that the preparation of financial reports with poor quality did not mediate the delay in the publication of financial reports due to the company experiencing financial distress.

5. Conclusion

This research aimed to reveal how financial distress affects financial reporting delay, whether the effect is entirely direct or there is a portion of indirect effect. A quantitative research method was employed. A purposive sampling technique was implemented to select companies that had been late in submitting their audited financial reports within the 2014 – 2020 period. Sixty-four companies were selected as sample units, meaning 448 firm years of observational data. However, data for 25 firm-years could not be collected. The analysis of this study used 423 firm years of observations. Data analysis was carried out by estimating the logistic regression and mediation models.

The following conclusions can be drawn based on identification and evaluation: (1) Public companies that cannot effectively manage their debt while operating cash flows are insufficient to meet their debt obligations will experience financial distress. The smaller the cash flow generated by a company, the higher likelihood that a company will experience financial distress. Furthermore, there is a fairly high probability that the company will publish its financial reports late. The appointment of a reputable auditor, such as the big-four auditor, is certainly expected to produce a high-quality audit report. However, it can increase the possibility of delays in publishing financial reports for a company experiencing financial distress. (2) Effect of financial distress experienced by a company on delay in the publication of financial reports is an entirely direct effect, not significantly mediated by poor-quality financial reports prepared as a result of financial distress. It is possible that to cover up financial distress experienced, the management of a company try to prepare in-house financial reports in such a way that it seems as if the company's financial condition is still good and certainly, financial reporting quality is not good enough. An auditor with a good reputation who audits poor-quality in-house financial reports without a doubt can potentially prolong audit report completion, which will delay the publication of financial reports.

Stakeholders must pay serious attention to a company in severe financial distress that engages a poor-reputation auditor to audit its financial reports, especially for companies whose operating age has not been too long. It is possible that financial reports published by the company with poor quality report, even though it has not been published late. As a result, utilizing information in those financial reports as the basis for making decisions is very risky. This study did not analyze a group of companies according to the economic sector in which companies operate. Differences in sectors could potentially affect the behaviour of the companies in preparing their financial reports when experiencing financial distress following business prospects in the sector. Sectors that recover quickly from a slump may influence companies to submit high-quality financial reports without being late even though they are experiencing financial distress, compared to a slow recovery from the slump.

Future research should consider the impact of the economic sector in which companies are operating. Each economic sector has different characteristics compared to other sectors. Economic sector characteristics potentially influence companies' behaviour in recording and compiling their financial reports. Additionally, some sectors receive support from the government through certain policies because they are of concern to the government; however, other sectors do not receive the same support.

Author Contribution

Author 1: conceptualization, writing original draft, data curation, formal analysis, investigation, methodology.
Author 2: review, supervision, validation.

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Conflict of Interest

The authors declare that there were no financial or commercial relationships that could have caused a conflict of interest in the research.

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