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The effects of financial distress and audit delay on audit quality: Firm size as a moderator in Consumer Cyclicals manufacturing companies

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Abstract

Audit quality is a critical concern because a company's financial condition and audit timeliness may influence its choice of reputable auditors. This study examines the effects of financial distress and audit delay on audit quality and tests the moderating role of firm size. A quantitative approach was employed using secondary data from 41 manufacturing companies in the Consumer Cyclicals subsector listed on the Indonesia Stock Exchange during 2023–2025, yielding 123 firm-year observations. The data were analyzed using Firth logistic regression. The results indicate that the Z-Score has a positive and significant effect on audit quality, whereas audit delay has no significant effect. Firm size is the strongest predictor, while the interaction between the Z-Score and firm size is positive and significant, although its significance is sensitive to GEE testing. These findings indicate that financial condition and company scale are associated with the likelihood of engaging Big Four audit firms, with firm size strengthening this relationship.

Keywords: Financial distress; Audit delay; Audit quality; Firm size; Big Four audit firms.

Abstrak

Kualitas audit menjadi perhatian penting karena kondisi keuangan perusahaan dan ketepatan waktu penyelesaian audit dapat berkaitan dengan keputusan perusahaan dalam memilih auditor bereputasi. Penelitian ini bertujuan menganalisis pengaruh *financial distress* dan *audit delay* terhadap kualitas audit serta menguji peran moderasi ukuran perusahaan. Penelitian ini menggunakan pendekatan kuantitatif dengan data sekunder dari 41 perusahaan manufaktur subsektor *Consumer Cyclicals* yang terdaftar di Bursa Efek Indonesia selama periode 2023–2025, sehingga menghasilkan 123 observasi perusahaan-tahun. Data dianalisis menggunakan regresi logistik Firth. Hasil penelitian menunjukkan bahwa Z-Score berpengaruh positif dan signifikan terhadap kualitas audit, sedangkan *audit delay* tidak berpengaruh signifikan. Ukuran perusahaan merupakan prediktor terkuat, sementara interaksi Z-Score dan ukuran perusahaan berpengaruh positif dan signifikan, meskipun signifikansinya sensitif terhadap pengujian GEE. Temuan ini menunjukkan bahwa kondisi keuangan dan skala perusahaan berkaitan dengan peluang penggunaan KAP Big Four, dengan ukuran perusahaan memperkuat hubungan tersebut.

Kata Kunci: *Financial distress*; *Audit delay*; Kualitas audit; Ukuran perusahaan; KAP Big Four.

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Introduction

Audit quality becomes a critical concern when companies face financial pressure and operational complexity that may influence auditors' decisions as well as companies' ability to obtain services from reputable audit firms. Empirical evidence indicates that this relationship is not always consistent. Purnamasari and Zenabia (2025), based on 102 observations from 17 companies in the energy sector over the 2019–2024 period, found that financial distress had no significant effect on audit quality, which was measured by Big Four affiliation. A similar finding was reported by Wijaya and Susilandari (2022) in 30 property, real estate, and construction companies during 2017–2020, where financial distress, measured using the debt-to-equity ratio, had no significant effect on audit quality measured through discretionary accruals. These findings indicate that financial pressure does not automatically alter audit quality or auditor selection.

A company's financial condition remains relevant because financial pressure may constrain its ability to pay audit fees and influence its decision to retain a reputable auditor. However, this effect depends on company characteristics and how audit quality is measured. Nurzahra and Budiantoro (2026), in their study of companies included in the Jakarta Islamic Index during 2019–2023, found that financial distress and firm size significantly affected audit quality; firm size also moderated several relationships in their model. In contrast, Agustin and Amiranto (2025), through a survey of 30 auditors from three public accounting firms in Surabaya, demonstrated that auditor competence, independence, and experience each had a positive and significant effect on audit quality. These differences in research contexts indicate that audit quality is associated not only with clients' financial conditions but also with auditors' professional capabilities.

Beyond financial conditions, audit timeliness is another important concern because delays may postpone the availability of information for stakeholders. Audit delay may also reflect a more complex examination process, particularly when auditors identify risk indicators or irregularities in transactions. Oktaviyanto and Ratnawati (2023), based on 37 auditor questionnaires from public accounting firms in Surabaya, found that red flags significantly affected audit delay, explaining that indications of fraud may require more extensive audit procedures. However, audit delays do not necessarily indicate lower audit quality. Amanda Sari et al. (2026), using 55 observations from 11 manufacturing companies listed on the Indonesia Sharia Stock Index during 2020–2024, found that audit delay had no significant effect on audit quality. This suggests that audit duration needs to be examined empirically rather than automatically regarded as an indicator of declining audit quality.

Previous studies on audit delay and firm size have produced mixed findings. Darmawan and Ardini (2021) found that audit delay had a negative effect on audit

quality among state-owned enterprises during 2016–2019, whereas audit tenure and auditor switching had no significant effects. Enjelika et al. (2026), in a study of 22 companies in the palm oil processing subsector during 2022–2024, reported that audit delay and firm size affected audit quality, while audit tenure and independence had no significant effects. In contrast, Meliatikasari and Saputra (2025) found that audit delay had a significant effect, whereas firm size had no significant effect, based on 65 financial statements from coal companies during 2019–2023. Dewi and Ratnawati (2024) also showed that remote auditing had no significant effect on audit quality, based on a survey of 63 auditors in Surabaya. Meanwhile, Tasya and Kuntadi (2024) concluded that audit delay, audit fees, and audit tenure were relevant to audit quality through a literature review rather than an independent empirical test. These differences in findings and measurement proxies leave room for further investigation in a more specific manufacturing context.

In light of these inconsistencies, this study aims to analyze the effects of financial distress and audit delay on audit quality and examine firm size as a moderating variable among manufacturing companies in the E1–E4 subsectors of the Consumer Cyclicals sector listed on the Indonesia Stock Exchange during 2023–2025. This study is important because it examines these relationships within a single industry context characterized by manufacturing operations, uses Big Four affiliation as a proxy for audit quality, and applies Firth logistic regression to accommodate the limited number of Big Four observations. Unlike previous studies, which have reported mixed findings across the energy, coal, property, and Sharia-indexed company sectors, this study examines whether financial conditions and audit delays are associated with auditor selection and whether these relationships vary according to company size. The findings are expected to provide a clearer understanding of the role of firm size in companies' auditor-selection decisions.

Method

This study employed an explanatory quantitative approach using secondary data obtained from audited annual financial statements and independent auditor reports. The research population comprised 54 manufacturing issuers in the E1–E4 subsectors of the Consumer Cyclicals sector listed on the Indonesia Stock Exchange (IDX), covering automobiles and components, household goods, leisure goods, and apparel and luxury goods. Subsector E5–E7 was excluded because it comprises service, media, and retail activities rather than manufacturing operations, making it inconsistent with the scope of application of the Altman Z-Score model (1968). The sample was selected using purposive sampling based on two criteria: companies had to be listed before December 31, 2023, and remain listed through December 31, 2025; and they had to provide complete data for all study variables throughout the 2023–2025 period. Based on these criteria, 41 companies were selected, yielding 123 firm-year observations.

Table 1. Sample selection

Selection criteria	Number of companies
Manufacturing companies in the E1–E4 subsectors of the Consumer Cyclicals sector (population)	54
Companies not listed before December 31, 2023	(6)
Companies with incomplete data	(7)
Sample companies per year	41
Total observations (41 companies × 3 years)	123

Source: Authors' calculations (2026).

Audit quality (Y) was measured using a dummy variable, assigned a value of 1 for companies engaging public accounting firms (PAFs) affiliated with the Big Four and 0 for companies engaging non-Big Four PAFs. This measurement reflects auditor selection and reputation rather than directly assessing the quality of each audit engagement (Arens et al., 2017; Rahman, 2021). Financial distress (X1) was measured using the Altman Z-Score, calculated as $Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5$. The components represent working capital, retained earnings, EBIT, market value of equity, and sales, respectively, scaled by total assets, except for X4, which is divided by total liabilities (Altman, 1968). Scores above 2.99 were classified as the safe zone, scores from 1.81 to 2.99 as the grey zone, and scores below 1.81 as the distress zone. Audit delay (X2) was calculated as the number of days between the fiscal year-end and the date of the independent auditor's report (Ashton et al., 1987), while firm size (M) was measured using the natural logarithm of total assets. The hypothesized relationships among the variables are presented in Figure 1.

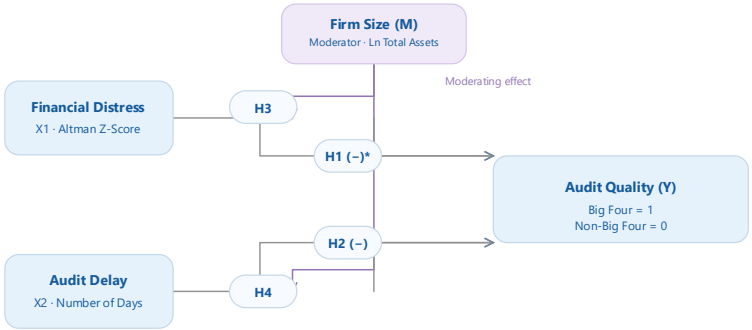

Figure 1. Research framework

Source: Developed by the authors (2026).

Hypothesis testing was conducted using Firth penalized likelihood logistic regression because audit quality was a dichotomous variable and the number of Big Four observations was relatively limited, accounting for 30 of the 123 observations. This method was employed to reduce small-sample estimation bias and address potential separation in logistic regression (Firth, 1993; Puhr et al., 2017). Model 1 included the

Z-Score, audit delay, and firm size to test H1 and H2. Model 2 used mean-centered variables and added the interaction terms between the Z-Score and firm size and between audit delay and firm size to test H3 and H4. The significance level was set at 5%, with one-tailed tests applied to H1–H3 and a two-tailed test applied to H4. Robustness was assessed using maximum likelihood logistic regression, generalized estimating equations (GEE) with robust standard errors clustered by company, and re-estimation after excluding three observations with standardized residuals outside the ±3 range (N = 120). Multicollinearity was assessed using tolerance and the variance inflation factor (VIF), while model fit was evaluated using the omnibus test, Hosmer–Lemeshow test, Nagelkerke R^2, and classification accuracy. The results were interpreted as statistical associations within the sample rather than evidence of causal relationships.

Results and Discussion

Descriptive statistics of financial condition, audit delay, and firm size

The characteristics of the companies in this study were examined using three main variables: financial distress, audit delay, and firm size. These variables provide an overview of companies' financial conditions, audit completion timeliness, and economic scale during the observation period. Financial distress reflects the level of a company's financial health, while audit delay indicates the time required by auditors to complete the financial statement audit process. Firm size, meanwhile, represents differences in company scale based on total assets. In addition to these three variables, the use of Big Four-affiliated auditors is also an important characteristic for describing the distribution of auditor selection within the sample. Presenting these descriptive statistics provides a basis for understanding the characteristics of the data before examining relationships among the variables through regression analysis.

Table 2. Descriptive statistics of continuous variables (N = 123)

Variable	Minimum	Maximum	Mean	Standard deviation
Financial distress (Z-Score)	−2.744	9.993	3.274	2.902
Audit delay (days)	51	176	88.17	21.063
Firm size (Ln total assets)	24.4331	30.7497	27.5249	1.6025

Source: Authors' calculations (2026).

As shown in Table 2, financial distress, measured using the Altman Z-Score, has a minimum value of −2.744 and a maximum value of 9.993, with a mean of 3.274 and a standard deviation of 2.902. The mean is above the safe-zone threshold of 2.99. However, the wide range of values indicates that the financial conditions of the sampled companies are not entirely uniform. This means that although companies tend to be financially healthy on average, some still experience considerable financial pressure. The presence of companies with negative Z-Scores further supports this

observation. Therefore, the average Z-Score falling within the safe zone should not be taken as evidence that all companies in the sample have sound financial conditions.

Audit delay has a minimum value of 51 days and a maximum of 176 days, with a mean of 88.17 days and a standard deviation of 21.063 days. This indicates that, on average, audit completion takes approximately three months after the fiscal year-end. However, the range of 125 days indicates considerable differences in audit completion times across companies. Meanwhile, firm size, measured using the natural logarithm of total assets, has a minimum value of 24.4331 and a maximum of 30.7497, with a mean of 27.5249 and a standard deviation of 1.6025. This variation indicates that the sampled companies differ in terms of asset scale. Thus, the characteristics of the companies examined vary not only in their financial conditions but also in audit duration and economic size.

Regarding auditor selection, ten companies each year engaged public accounting firms (PAFs) affiliated with the Big Four, accounting for 24.4% of the total observations. Accordingly, the majority of observations, or 75.6%, involved non-Big Four auditors. Furthermore, no companies switched from Big Four to non-Big Four auditors, or vice versa, during the 2023–2025 period. In relation to financial conditions, approximately 28.5% of the observations fell within the distress zone. The proportion of companies using Big Four auditors in this group was only 8.6%, lower than that in the grey-zone group (29.7%) and the safe-zone group (31.4%). Notably, all three distress-zone observations involving Big Four auditors came from a single company. This pattern suggests that Big Four auditors were relatively more prevalent among companies with healthier financial conditions, although this descriptive relationship does not establish statistical significance.

Hypothesis testing: Direct effects and the moderating effect of firm size

Hypothesis testing was conducted using Firth logistic regression because the dependent variable is dichotomous and the number of observations involving public accounting firms (PAFs) affiliated with the Big Four was relatively limited, amounting to 30 out of 123 observations. The analysis was divided into two models. Model 1 examined the direct effects of financial distress, audit delay, and firm size on the likelihood of engaging a Big Four PAF. Model 2 incorporated mean-centered variables and two interaction terms: the interaction between the Z-Score and firm size, and the interaction between audit delay and firm size. The inclusion of these interaction terms aimed to determine whether firm size changes the relationships between each independent variable and the likelihood of engaging a Big Four PAF. Firth regression was employed to reduce estimation bias in small samples and address the possibility of separation in logistic regression.

Table 3. Firth logistic regression results (N = 123)

Variable	B	S.E.	Exp(B)	p-value
Model 1: Direct effects				
Constant	−30.744	6.286	–	<0.001
Z (Financial distress)	0.233	0.094	1.262	0.010
AD (Audit delay)	0.016	0.011	1.016	0.192
M (Firm size)	0.980	0.199	2.665	<0.001
Model 2: Moderation (mean-centered)				
Constant	−1.649	0.354	–	<0.001
Zc	0.156	0.123	1.168	0.236
ADc	0.018	0.012	1.019	0.150
Mc	1.059	0.252	2.885	<0.001
Zc × Mc	0.368	0.112	1.445	<0.001
ADc × Mc	−0.012	0.008	0.989	0.197

Note: The penalized likelihood ratio test yielded 38.169 (df = 3) for Model 1 and 53.639 (df = 5) for Model 2; both were significant at $p < 0.001$.

Source: R output, logistf package (2026).

As shown in Table 3, Model 1 indicates that the Z-Score has a positive and significant coefficient (B = 0.233; p = 0.010; Exp(B) = 1.262). Because lower scores reflect greater financial distress, this result indicates that companies with healthier financial conditions have a higher likelihood of engaging a Big Four PAF. Accordingly, an increase in financial distress is associated with a lower likelihood of engaging a Big Four PAF; therefore, H1 is supported. In contrast, audit delay has a positive coefficient of 0.016, with p = 0.192. This effect is not statistically significant and its direction is contrary to the hypothesized relationship. Therefore, H2 is not supported. These findings indicate that financial condition has a clearer association with PAF selection than audit completion time in Model 1.

Firm size also demonstrates a strong direct effect on the likelihood of engaging a Big Four PAF. In Model 1, the coefficient for firm size is 0.980, with $p < 0.001$ and an Exp(B) of 2.665. This means that a one-unit increase in the natural logarithm of total assets is associated with approximately 2.665 times higher odds of engaging a Big Four PAF, holding the other variables constant. In Model 2, the direct effect of firm size remains positive and significant (B = 1.059; $p < 0.001$; Exp(B) = 2.885). Meanwhile, the main coefficients for the Z-Score and audit delay in Model 2 are not statistically significant. These coefficients represent the respective relationships when firm size is at its mean value. Thus, these results do not rule out the possibility of moderating effects and confirm that firm size is an important predictor of auditor selection.

The interaction analysis in Model 2 shows that the interaction between the Z-Score and firm size is positive and significant (B = 0.368; p < 0.001; Exp(B) = 1.445). This result indicates that the relationship between financial condition and the likelihood of engaging a Big Four PAF becomes stronger among larger companies. Since a higher Z-Score indicates healthier financial conditions, the positive association between financial health and the likelihood of engaging a Big Four PAF strengthens as firm size increases. Therefore, H3 is supported. Firm size acts as a *quasi-moderator* because it has both a significant direct effect and a significant interaction effect. In contrast, the interaction between audit delay and firm size is not statistically significant (B = −0.012; p = 0.197). Accordingly, H4 is not supported, as firm size does not appear to alter the relationship between audit delay and PAF selection.

Table 4. Comparison of model fit (maximum likelihood, N = 123)

Model fit measure	**Model 1**	**Model 2**
Number of predictors	3	5
−2 Log Likelihood	96.600	77.584
Cox & Snell R^2	0.278	0.381
Nagelkerke R^2	0.414	0.569
Hosmer–Lemeshow p-value	0.051	0.010
Overall classification accuracy	78.9%	89.4%

Source: IBM SPSS Statistics output (2026).

In addition to the significance of the interaction coefficients, model fit was evaluated to assess the contribution of including the moderating variables. Table 4 compares Model 1 and Model 2 based on maximum likelihood estimation, rather than the Firth estimation used as the basis for the main hypothesis tests. Following the addition of the two interaction terms, the −2 log likelihood decreased from 96.600 to 77.584, while Nagelkerke R^2 increased from 0.414 to 0.569. Classification accuracy also increased from 78.9% to 89.4%. These changes indicate an improvement in the models' ability to explain and classify Big Four PAF selection. However, the Hosmer–Lemeshow p-value changed from 0.051 to 0.010, indicating weaker calibration in Model 2. Therefore, the improvements in explanatory power and classification accuracy do not necessarily indicate an overall improvement in model fit.

Consistency of hypothesis testing results through robustness analysis

Robustness checks were conducted to assess the consistency of the Firth logistic regression results using three alternative approaches: maximum likelihood logistic regression, generalized estimating equations (GEE) with robust standard errors clustered by company, and maximum likelihood estimation after excluding three outlier observations. The comparison covered the coefficients and two-tailed significance values of each variable in Models 1 and 2. The Firth and maximum

likelihood regression results showed consistent coefficient directions and relatively similar significance levels. However, the coefficients obtained from maximum likelihood estimation tended to be larger because this method does not apply the estimation penalty used in Firth regression. This cross-estimator comparison is important for determining whether the study's conclusions depend on the choice of estimator.

Table 5. Robustness test of coefficients across estimators: B (two-tailed p-values)

Variable	Firth	Maximum likelihood	GEE (robust)	ML without outliers (N = 120)
Model 1				
Z	0.233 (0.010)	0.246 (0.014)	0.246 (0.092)	0.378 (0.002)
AD	0.016 (0.193)	0.016 (0.212)	0.016 (0.450)	0.005 (0.768)
M	0.980 (<0.001)	1.037 (<0.001)	1.037 (<0.001)	1.240 (<0.001)
Model 2				
Zc	0.156 (0.236)	0.152 (0.283)	0.152 (0.333)	0.256 (0.152)
ADc	0.018 (0.150)	0.018 (0.180)	0.018 (0.217)	0.018 (0.259)
Mc	1.059 (<0.001)	1.194 (<0.001)	1.194 (0.023)	1.517 (<0.001)
Zc × Mc	0.368 (<0.001)	0.435 (0.001)	0.435 (0.090)	0.557 (0.003)
ADc × Mc	−0.012 (0.197)	−0.013 (0.211)	−0.013 (0.170)	−0.009 (0.455)

Source: R and IBM SPSS Statistics outputs (2026).

The results in Table 5 show that using GEE with robust standard errors clustered by company changes the significance conclusions for several variables. The Z-Score coefficient in Model 1 is no longer statistically significant ($p = 0.092$), nor is the Zc × Mc interaction in Model 2 ($p = 0.090$). Both results were previously significant in the Firth and maximum likelihood regressions. This change indicates that the support for H1 and H3 is sensitive to the dependence among observations from the same company. In contrast, firm size remains significant in both Model 1 ($p < 0.001$) and Model 2 ($p = 0.023$). These findings indicate that the direct effect of firm size is more consistent than the relationship involving the Z-Score and its moderating effect when the company-level data structure is taken into account.

The analysis excluding three outlier observations produces a larger Z-Score coefficient ($B = 0.378$; $p = 0.002$) and a stronger Zc × Mc interaction ($B = 0.557$; $p = 0.003$). These results indicate that the effects of financial condition and the moderating effect of firm size remain significant and become stronger after the outlier observations are excluded. Meanwhile, audit delay and its interaction with firm size remain statistically insignificant across all testing approaches. Accordingly, H2 and H4 are consistently not supported, while the direct effect of firm size demonstrates the greatest

consistency. Overall, the robustness checks provide support for some of the main findings; however, the significance of H1 and H3 should be interpreted cautiously because it weakens when the dependence among observations across periods within the same company is taken into account.

The effects of financial distress, audit delay, and firm size on audit quality

The findings indicate that a higher Z-Score, reflecting healthier financial conditions, is associated with a greater likelihood of engaging a Big Four public accounting firm (PAF). This means that companies experiencing greater financial distress tend to have a lower likelihood of engaging highly reputable auditors. This finding is consistent with Syafanisa Lizara and Subiyanto (2022), who analyzed 195 observations from 39 financial services companies over the 2017–2021 period and found a negative effect of financial distress on audit quality, proxied by PAF reputation. Suardi et al. (2026) also identified a negative and significant effect in 44 observations from pharmaceutical companies, with audit quality measured by Big Four affiliation. Arifah and Suhatman (2026) reported a similar result in 60 observations from retail companies, finding a negative and significant effect of financial distress ($p = 0.008209$). The consistency across these three studies strengthens the argument that financial distress is not merely a matter of a company's ability to sustain its performance but is also associated with its likelihood of obtaining audit services from highly reputable PAFs.

The relationship between financial distress and audit quality does not always follow the same direction because of differences in measurement proxies and the characteristics of the sectors examined. Fadhilah et al. (2025), who studied mining companies, found a positive and significant effect of financial distress on audit quality using discretionary accruals as a proxy. This finding differs from the present study because discretionary accruals reflect financial reporting characteristics, whereas Big Four affiliation indicates auditor selection or reputation. In contrast, Mulyani and Ardaninggar (2025) found that financial distress had no significant effect on audit quality among companies in the industrial sector ($p = 0.0987$). These differences indicate that financial distress may have different implications depending on which aspect of audit quality is measured. In the present study, the negative relationship between the Z-Score and financial distress reinforces the argument that financial condition is more relevant to explaining auditor selection than to directly assessing the quality of audit engagements.

Regarding audit delay, this study found no significant relationship with the likelihood of engaging a Big Four PAF. This result is consistent with Rahayu and Septanta (2025), who examined 78 observations from 13 companies in the Consumer Cyclicals sector over the 2019–2024 period and obtained an audit delay coefficient of -0.003641 with $p = 0.5716$. Suardi et al. (2026) also reported that audit delay had no significant effect in a logistic regression model using Big Four affiliation as a proxy. Cucunabila and

Mayangsari (2024) found a similar result, with a p-value of 0.1220, although their study covered manufacturing, property, and real estate companies. In the present study, the mean audit delay of 88.17 days, with a range of 51–176 days, indicates variation in audit completion time. However, this variation is insufficient to explain differences in auditor affiliation status. This finding confirms that the speed of audit completion is not a determining factor in the likelihood of companies engaging a Big Four PAF within the study sample.

The findings of this study differ from those of Amanda and Suryanawa (2024), who analyzed 189 observations from consumer goods industry companies over the 2020–2022 period and found a negative effect of audit delay on audit quality, while firm size had a positive effect. These differences may be related to sector composition, the observation period, and model specifications. Sari et al. (2019) also reported that audit delay had no significant effect among transportation companies during 2014–2017; firm size had a direct effect but did not moderate the relationship between audit delay and audit quality. The findings of Sari et al. provide a point of comparison for the moderation results of the present study, although their research was conducted in a different sector. These differences indicate that the effect of audit delay is not universal and depends heavily on the context in which audit quality is measured. The present study offers a more specific finding: audit delay does not explain companies' selection of Big Four PAFs. Therefore, reporting timeliness cannot be treated as a substitute for an indicator of auditor reputation.

Firm size is the strongest and most consistent predictor in the research models. The results indicate that companies with greater total assets have a higher likelihood of engaging a Big Four PAF. Syafanisa Lizara and Subiyanto (2022) found a positive effect of firm size in 195 observations from financial services companies, with audit quality proxied by PAF reputation. Amanda and Suryanawa (2024) also reported a positive effect of firm size on audit quality among consumer goods industry companies. Sari et al. (2019) found that firm size had a significant effect on audit quality among transportation companies, although it did not moderate the relationship between audit delay and audit quality. Theoretically, larger companies face more complex agency relationships and monitoring requirements and have greater resources to finance external monitoring mechanisms (Jensen & Meckling, 1976). The strong effect of firm size across all models in this study establishes economic scale as a key factor in explaining the selection of Big Four PAFs among manufacturing companies in the Consumer Cyclicals sector.

The moderation results indicate that firm size strengthens the relationship between the Z-Score and the likelihood of engaging a Big Four PAF but does not moderate the relationship between audit delay and auditor selection. Because a higher Z-Score indicates healthier financial conditions, the positive interaction means that the

relationship between financial health and the likelihood of engaging a Big Four PAF becomes stronger among larger companies. This interpretation is consistent with DeAngelo's (1981) reputation argument that larger auditors have more reputational capital to protect and stronger incentives to maintain independence. Regarding audit delay, the findings are consistent with Sari et al. (2019), who found no moderating effect of firm size. However, the interaction between the Z-Score and firm size becomes weaker when GEE with standard errors clustered by company is applied ($p = 0.090$). This means that firm size strengthens the relationship between financial condition and Big Four PAF selection in the main model, but the strength of this evidence remains sensitive to dependence among observations from the same company across periods. In contrast, the absence of a moderating effect for audit delay indicates that company size does not alter a relationship that was not statistically significant in the first place.

The findings have implications for companies, auditors, investors, and creditors. Companies with larger asset bases and healthier financial conditions are more likely to engage Big Four PAFs. Accordingly, business scale and financial health should be considered when examining auditor-selection decisions. For PAFs, clients' financial conditions should be taken into account from the engagement acceptance stage, particularly when clients have large-scale operations and substantial economic impact. For investors and creditors, Big Four affiliation may provide information about auditor reputation, but it is insufficient to assess the overall quality of audit engagements. This study has several limitations: audit quality is measured solely through Big Four affiliation; the number of companies and Big Four observations is relatively limited; and auditor affiliation status changes infrequently during the observation period. Future research should extend the observation period and sector coverage and incorporate additional proxies, such as discretionary accruals, auditor industry specialization, and audit opinions. The main contribution of this study lies in providing evidence that financial condition, and particularly firm size, is associated with the selection of highly reputable auditors, whereas audit delay offers little explanatory power in such decisions.

Conclusion

The findings indicate that financial condition and firm size are important factors associated with the likelihood of manufacturing companies in the Consumer Cyclicals sector engaging Big Four public accounting firms (PAFs), whereas audit delay has no significant effect on auditor selection. The positive and significant Z-Score coefficient indicates that companies with healthier financial conditions are more likely to engage Big Four PAFs. This finding suggests that financial distress may constrain companies' propensity to engage highly reputable auditors. This relationship becomes stronger among larger companies, indicating that financial condition is more relevant to auditor-selection decisions in companies with greater business scale. Firm size also

emerges as the strongest and most consistent predictor across all tested models. Conversely, audit completion time does not significantly determine the selection of Big Four PAFs, either directly or through its interaction with firm size. These findings confirm that auditor selection is more closely associated with financial condition and company size than with the time required to complete the audit process.

This study contributes to the audit quality literature by demonstrating that firm size strengthens the relationship between financial condition and Big Four PAF selection among manufacturing companies in the Consumer Cyclicals sector. It also clarifies the distinction between auditor reputation and audit engagement quality, as Big Four affiliation is used as a proxy for auditor selection rather than a direct measure of the quality of each audit engagement. Nevertheless, this study has several limitations, including the use of Big Four affiliation as the sole proxy for audit quality, the coverage of 41 companies over a three-year observation period (2023–2025), and the limited number of observations involving companies that engaged Big Four PAFs. In addition, the effects of financial condition and its interaction with firm size become weaker when within-company dependence among observations is accounted for through GEE estimation. Future research should extend the observation period, increase the number of companies, and broaden the subsector coverage, while also incorporating alternative audit quality proxies such as discretionary accruals, auditor industry specialization, and audit opinions. Additional data on audit fees, client acceptance decisions, and auditor switching are also needed to explain the mechanisms underlying companies' auditor-selection decisions.

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