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-RESEARCH ARTICLE-

CHALLENGES TO AUDIT QUALITY: HOW AUDIT FIRM TENURE MODERATES AUDIT MARKET CONCENTRATION, BRANCH OFFICES, PARTNER ROTATION, AND ASSIGNMENT LOADS

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─Abstract─

Ensuring the reliability of financial reporting through high-quality audits is essential for attracting and retaining investor confidence. Therefore, our empirical analysis elaborates on how the interaction involving audit firm tenure and audit market concentration, branch offices, partner rotation, and assignment loads affects audit quality. The analysis addresses the gap between investor expectations and auditor responsibilities, highlighting the severe consequences of prolonged relationships on audit quality deficiencies. The empirical analysis incorporated data from publicly traded entities in Indonesia from 2018 to 2022, covering 2,685 firm-year observations. We

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utilized panel data regression techniques using STATA software. The outcomes demonstrate that audit market concentration and partner rotation have a favorable connection with audit quality, while the assignment loads have a detrimental effect. However, audit firm tenure moderates these relationships, diminishing the positive impact of market concentration and partner rotation and exacerbating the adverse effects of branch offices and assignment loads. The findings emphasize the need for policymakers to formulate policies that prevent prolonged relationships between audit firms and their clients by enforcing dual mandatory rotation, evaluating branch office strategies, and managing assignment workloads to maintain high audit quality. Investors should be cautious about the impact of a prolonged auditor-client association on their investment decisions.

Keywords: Audit quality, audit firm tenure, audit market dominance, audit branch offices, audit partner rotation, and workloads.

INTRODUCTION

The expansion of audit firms in Indonesia through affiliations with global networks and the establishment of branch offices has increased market share and revenue. However, using legal loopholes to retain clients for extended periods has resulted in recent audit failures. Consequently, numerous financial reports fail to reflect actual conditions and manipulate earnings, undermining investor protection and exposing gaps between investor expectations and auditor responsibilities. Audit failures have led to severe consequences in Indonesia, including auditor license suspensions and firm permit cancellations. The demand for high-quality audits arises from the inherent conflict between principals and agents, as explained in Jensen and Meckling (1976) agency theory. Therefore, this study analyzes the determinants of audit quality in response to these challenges.

Market dominance is closely associated with oligopolistic structures, and several studies have applied the oligopoly market dominance theory to explore its impact on audit industry consolidation and audit firm behavior (Lee, 2024). The expansion of international audit firms through networks, associations, consolidation, and mergers involving major players such as the Big Four and other large audit firms has raised policymakers' concerns about the market competition (Bradbury & Kim, 2023; Xin et al., 2023), which may negatively affect audit quality. In contrast, Xin et al. (2023) observe that while the Big Four have reduced their audit fee premiums to dominate in the market, this reduction does not alter audit quality. The audit costs premium paid to the Big Four is necessary as a market signal, reinforcing an auditor's reputation for delivering higher-quality audits. However, Cahan et al. (2021) argue that heightened competition does not unavoidably result in improved audit quality, yet it may result in declining audit quality among audit firms. Conversely, Chen et al. (2024) suggests

that market dominance by the Big Four enhances audit quality, while Bradbury and Kim (2023) contend it has little bearing on audit quality. Although several investigations have analyzed the link between audit market concentration and audit quality, the findings have yet to be resolved.

Moreover, the local audit market has intensified its market share by establishing branch offices (Chen et al., 2024). Gong et al. (2023) and Wang (2023) investigated that establishing branch offices improves audit quality by enabling the exchange of experiences and knowledge. However, Chen et al. (2024) observes that newly established branch offices attract clients by offering significant discount audit fees, intensifying rivalry among audit firms, and negatively affecting audit quality. Spatial theory suggests that closer client proximity provides a competitive edge (Chen et al., 2024). Building on this premise, prior studies have found that geographic decentralization enhances audit quality by placing auditors near clients (Wang, 2023). However, despite these theoretical and practical insights, empirical analyses examining the relationship between audit firms' branch offices and audit quality remain inconclusive, indicating a need for further investigation.

Audit partners strive to meet the firm's budget targets by taking on a high volume of clients, resulting in excessive assignment loads that ultimately compromise audit quality (Mnif, 2022). Chen et al. (2020) and Suzuki (2024) argue that heavy assignment loads reduce audit quality, though the availability of audit firms' resources mitigates this impact. Similarly, Mnif (2022) link higher assignment loads, particularly the number of clients managed annually, to a deterioration of audit quality. According to queueing theory (Hill, 1963), a supervisor cannot effectively oversee subordinates when managing a workload. Therefore, exceeding this capacity leads to work compression, requiring auditors to complete large volumes of work within tight timeframes. However, Cheng et al. (2021) highlight a contrasting perspective: increased partner assignment loads enhance audit quality. Kim (2024)) empirically demonstrate that non-Big Four audit firms with flexible staffing during peak audit seasons attract more clients by offering lower audit fees, reducing risks, and benefiting clients without compromising audit quality. By leveraging their assignment loads, audit partners oversee engagement workloads to maintain compliance with professional standards and regulatory requirements despite demanding schedules, since empirical evidence from Kim (2024) reports an insignificant link between partner assignment loads and audit quality.

European regulators have approved a dual mandatory rotation system, requiring the rotation of audit firms and audit partners (Federsel, 2025) (Horton et al., 2021). In contrast, Indonesian regulators revoked the obligation to rotate audit firms (Martani, 2021). Practitioners have raised significant concerns about rotation's effectiveness in enhancing audit quality, citing switching costs such as losing client knowledge during transitions (Kuang, 2020). Martani (2021) found that mandatory rotation has a limited

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influence on improving auditor objectivity and audit quality. In addition, some oppose the audit firm rotation rule, arguing that there is insufficient evidence linking long audit firm tenure to a decline in audit quality and that rotation can introduce challenges, such as a greater risk of errors in the first year of assignment (Kuang, 2020). Although proponents of rotation argue that shorter auditor tenures foster greater objectivity and skepticism by minimizing familiarity risks (Horton et al., 2021; Martani, 2021), a current paper by Greiner et al. (2024) asserts that audit quality declines when clients are transferred to smaller auditing firms, while no significant improvement in audit quality when clients are moved to the more prominent auditing firm. Similarly, partner rotation is often viewed as a tool to foster audit quality by maintaining independence and introducing fresh perspectives (Florio, 2024). However, its effectiveness remains debated, as studies like those by Dayanandan and Kuntluru (2023) indicate that audits in the initial year of partner rotation have a higher error rate. Further, analyses by Martani (2021) and Mohapatra (2021) suggest that partner rotation has minimal impact on audit quality. Lin and Yen (2022) argue that auditor rotation impacts financial statements' credibility primarily only in specific contexts, such as when the auditor revises their evaluation of risk assessments, which alters the audit plan, process, and the final audit outcome. These findings correspond with Federsel (2025), who demonstrates that audit partner rotation has minimal impact on the fresh-look effect, while mitigating long tenure through audit firm rotation enhances the fresh-look effect. Although some researchers argue that practitioners question the benefits of rotation, the propinquity theory posits that frequent interaction and proximity lead to increased familiarity (Byrne & Buehler, 1955), which may compromise objectivity. Overall, empirical findings on audit firm tenure and partner rotation are inconsistent, with no definitive conclusion regarding their influence on audit quality.

Recent empirical research has employed various proxies to assess audit quality, including going concern opinion (Hossain, 2023). However, Guo et al. (2020) and Chu et al. (2022) critique this approach, arguing that such opinion is predominantly issued for financially distressed firms, making them less effective in large samples where most entities remain financially stable. Our study refines the audit quality proxy to address this limitation by incorporating a broader going concern assessment, as outlined in Standard on Auditing 570 (SA 570).

This study is driven by observed phenomena and gaps in existing research, aiming to explore how the interaction between audit firm tenure with audit market concentration, partner rotation, branch offices, and assignment loads influences audit quality. By examining the complex interplay among these factors, this study aims to address existing gaps and offer meaningful theoretical and practical insights for stakeholders, including regulators, investors, and researchers.

We organize the paper with the following structure: Section 2 reviews the relevant

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literature and outlines the hypotheses. Section 3 details the research methodology employed in the study. Section 4 reports the empirical findings along with supplementary analyses. Section 5 offers a discussion of the results. Lastly, Section 6 concludes the paper by summarizing the key insights and proposing implications and directions for future research.

LITERATURE REVIEW

The Public Company Accounting Oversight Boar elaborates on the reliability of an auditor's assessments of an entity's going concern status as a key element of audit quality. Auditors' inability to identify going concern risks signals deficiencies in audit quality (Francis, 2024). Prior empirical analyses, like Hossain (2023) and Mohapatra (2021), have utilized the going concern opinion as an audit quality proxy. Hossain (2023) rely on secondary data to evaluate audit quality, using a going concern opinion as a key indicator, typically measured with a dummy variable. This study emphasizes that assessing going concern requires auditors to thoroughly examine an entity's financial and operational conditions, making this capability a pivotal measure of audit quality (Francis, 2024). The need for high-quality audits stems from the inherent conflict between principals and agents, as outlined in Jensen and Meckling (1976) agency theory.

Firms with significant market power may impose higher prices, which drives market concentration and is closely associated with oligopolistic structures, while studies have applied the oligopoly market dominance theory to examine its effects on audit market concentration and audit firm practices (Lee, 2024; Wesson, 2021). Brockbank et al. (2023) have inferred that a concentrated audit market stimulates auditors' efforts to improve their performance, thereby enhancing audit quality. In addition, Bradbury and Kim (2023) concluded in their empirical analysis that higher concentration among audit firms is unlikely to compromise audit quality. To assess audit market concentration, earlier studies have predominantly relied on regression analysis with secondary data, utilizing total assets (Rajabalizadeh, 2024) or total revenue (Lee, 2024)as proxies for market share.

According to Cahan et al. (2021), mergers among audit firms enhance market concentration, improving audit quality by driving stronger competition over audit fees. Similarly, Brockbank et al. (2023)Brockbank et al. (2023) find that auditors put significant effort into delivering higher audit quality in such competitive environments. Bradbury and Kim (2023)Bradbury and Kim (2023) outline that increased auditor concentration does not elevate risk or compromise audit quality. Furthermore, Rajabalizadeh (2024)Rajabalizadeh (2024) emphasizes that intensified competition in concentrated markets accelerates financial reporting, a crucial element of audit quality. All of them lead to the following hypothesis:

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Hypothesis 1: *Audit market concentration positively affects audit quality.*

Spatial theory posits that the proximity of markets to customers influences competitive advantage (Chen et al., 2024; Hotelling, 1929). Geographic decentralization by placing auditors closer to clients impacts the audit process's quality and effectiveness (Wang, 2023). The expansion of audit firms through branches fosters growth that has a direct impact on audits (Chen et al., 2024; Wang, 2023). The presence of branch offices by audit firms reduces the time and expenses associated with auditors visiting client companies, enabling auditors to identify more discrepancies, better understand domestic laws and market conditions, and bridge cultural gaps while allowing companies to access higher-quality audit services at no additional cost (Gong et al., 2023). A prior study by Chen et al. (2024) employed a regression analysis approach using secondary data to measure branch office coverage based on the total number of an audit firm's branch offices generated by location.

Chen et al. (2024) underlines that greater decentralization in audit firms hinders the ability to maintain uniform audit quality across regions, leading to inconsistencies and reduced audit quality. Hence, expanding audit firms through establishing branch offices intensifies competition, negatively impacting audit quality as office growth increases. Chen et al. (2024) presents an empirical analysis that establishing small audit branch offices by audit firms negatively affects audit quality by reducing audit fees charged to clients. We argue that the uncontrolled expansion of audit offices to secure more clients, coupled with inadequate monitoring, diminishes audit quality. Accordingly, we propose the following hypothesis

Hypothesis 2: *Branch offices negatively affect audit quality.*

Engagement team rotation helps mitigate risks associated with prolonged relationships and maintains objectivity (Florio, 2024), aligning with the propinquity theory, which suggests that increased familiarity due to proximity can reduce objectivity (Byrne, 1961; Byrne & Buehler, 1955). Long auditor tenure threatens independence and erodes professional skepticism, making rotation crucial for maintaining audit quality and preventing auditors from overlooking financial statement fraud (Eleftheriou et al., 2023; Florio, 2024). Studies show that rotating auditors introduces fresh perspectives, improving the audit quality and reducing the likelihood of audit failure (Florio, 2024). In addition, research suggests that lower audit firm tenure enhances audit quality, positively impacting firm value (Saleh Aly, 2023) and improving a fresh-look effect (Federsel, 2025). Studies on partner rotation with secondary data have employed binary variables to capture rotation events (Federsel, 2025; Kang, 2023).

Horton et al. (2021) argue that prolonged audit engagements involving auditors and clients deteriorate objectivity and diminish professional skepticism, underlining the

importance of partner rotation, as they provide statistical evidence that rotating audit partners enhances audit quality. Supporting this evidence, Eleftheriou et al. (2023) assert that extended tenures erode skepticism and hinder fraud detection, ultimately lowering audit quality. Fan et al. (2024) underline that partner rotation promotes audit quality and mitigates the risk of share price volatility. Drawing on these analyses, we formulate the hypothesis:

Hypothesis 3: *Partner rotation positively affects audit quality.*

Handling multiple audits simultaneously creates significant pressure and time limitations (Singh et al., 2022; Suzuki, 2024) Queueing theory elaborates on the scope of control and the number of subordinates a supervisor can effectively oversee when managing a workload (Hill, 1963). Work compression arises when auditors are required to complete a large volume of work quickly (Chen et al., 2020). Auditors frequently handle several audits at once, but given time constraints, monitoring the engagement loads is crucial to ensure that all audits comply with professional standards. Auditors often manage multiple audits simultaneously, making it essential to utilize internal audit firm resources for monitoring engagements within time constraints (Suzuki, 2024). This oversight ensures compliance with professional standards and helps maintain audit quality (Chen et al., 2020; Cheng et al., 2021). Previous studies have utilized secondary data to measure assignment loads, either by counting the number of audit engagements managed by each partner, as in Mnif (2022), or by evaluating total audit fees, as applied in Chen et al. (2020).

Singh et al. (2022) have discovered a beneficial relationship between the partner-to-client ratio and audit quality, suggesting that an optimal workload contributes to better outcomes. Therefore, audit partners must carefully manage their workload, as the likelihood of audit deficiencies is linked to the proportion of audit engagements relative to their overall responsibilities (Chen et al., 2020; Cheng et al., 2021). Researchers empirically conclude that more assignments are connected with impaired audit quality, implying that auditors with excessive workloads are likelier to deliver lower-quality audits (Christensen et al., 2021; Heo, 2021). Singh et al. (2022) further observe that clients of overburdened auditors experience delays in audit completion, negatively affecting audit quality. In addition, other studies have statistically established an adverse interrelation between auditor assignment loads and audit quality (Mnif, 2022; Suzuki, 2024). Based on this evidence, we propose that inadequate partner assignment loads impair audit quality, leading to the following hypothesis:

Hypothesis 4: *Partner assignment loads negatively influence audit quality.*

Florio (2024) empirically concludes that long-term auditor tenure harms audit quality. Using regression analysis and secondary data, Payne and Williamson (2021) defined audit firm tenure as the cumulative number of years a firm audited a particular client.

In a similar methodological framework, advocates of auditor rotation emphasize that reducing the length of auditor tenure enhances independence and professional skepticism by minimizing the risk of overly close ties between the audit firm and its clients (Martani, 2021). Similarly, Payne and Williamson (2021) identify a decline in audit quality when long-standing relationships exist between audit firms and the chief financial officer of the audited entity. To address this risk, rotation is essential for improving audit quality (Eleftheriou et al., 2023). Most recently, an investigation by Judge et al. (2024) outlines that prolonged audit assignments between audit firms and clients undermine audit quality by promoting excessive familiarity, which may compromise auditor independence. Therefore, the following hypotheses are proposed:

Hypothesis 5: *Audit firm tenure mitigates the positive influence of concentration in the audit market on audit quality.*
Hypothesis 6: *Audit firm tenure enhances the negative influence of branch offices on audit quality.*
Hypothesis 7: *Audit firm tenure mitigates the positive influence of partner rotation on audit quality.*
Hypothesis 8: *Audit firm tenure enhances the negative influence of partner assignment loads on audit quality.*

RESEARCH METHODS

This study employed a quantitative research approach using regression analysis and secondary data. STATA software was used to perform hypothesis testing. Descriptive statistics were utilized to summarize the characteristics of the data. A correlation matrix was used to examine multi collinearity issues within the dataset. The overall model fit was assessed using the F-test and R^2 values, while individual hypotheses were tested using t-tests on the regression coefficients. Additionally, generalized least squares (GLS) was applied as another statistical technique to enhance the robustness of the model. Furthermore, to ensure the reliability of the main hypothesis testing, the measurement of audit market concentration was replaced, and a control variable distinguishing between entities audited by Big Four and non-Big Four audit firms was introduced.

Population and Sample

We examined companies incorporated in Indonesia and publicly traded on the Indonesia Stock Market (IDX), covering 2018 to 2022. It relied on empirical data from their annual reports from the IDX or the companies' websites. The sample included companies from diverse industries: energy, basic materials, industrials, consumer goods, healthcare, properties and real estate, technology, infrastructure, and transportation and logistics.

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The sample selection followed a purposive sampling method, with criteria including (1) entities consistently listed during the observation period, (2) entities with complete and publicly available audit and financial data, and (3) firms audited by external auditors. After applying these criteria, a final sample of 2,685 firm-year observations was included in the analysis. All data were manually reviewed for consistency, cleaned to address missing values and outliers, and then compiled into a structured database for further analysis using STATA.

Empirical Model

We investigated our hypotheses through regression analysis using STATA. We used the regression model as follows:

$$AQT = \beta0 + \beta1MRS + \beta2BOF + \beta3PAR + \beta4SPC + \beta5MRS*TEU + \beta6BOF*TEU + \beta7PAR*TEU + \beta8SPC*TEU + \beta9LVE + \beta10REL + \beta11MOB + \varepsilon$$

Where AQT = audit quality, MRS = audit market concentration, BOF = branch office, PAR = partner rotation, SPC = audit partner assignment loads, TEU = audit firm tenure, LVE = debt ratio, REL = reporting lag, and MOB = market-to-book of equity.

Several empirical studies used going concern opinion as an audit quality proxy (Francis, 2024), often measured with a dummy variable (Hossain, 2023; Mohapatra, 2021). However, Chu et al. (2022) and Guo et al. (2020) highlighted its limitations, as it primarily applied to financially distressed companies, causing inconsistencies in hypothesis testing and reducing statistical power in samples containing both stable and distressed companies. Therefore, our study measured audit quality (AQT) by focusing on going concern assessment disclosures to overcome this limitation. The evaluation of going concern matters was structured around criteria specified in SA 570, as referred to in the Appendix. For this assessment, each indicator aligned with going concern disclosure standards was assigned a score of one. Aggregate scores were subsequently calculated by summing these values and normalizing them against the total number of indicators, yielding a going concern ratio for each sampled entity. We applied the Herfindahl-Hirschman Index to assess audit market concentration by analyzing the total assets held by companies (Rajabalizadeh, 2024; van Raak et al., 2020). This study adopted Chen et al. (2024) approach by measuring branch office coverage using the total of an audit firm's branch offices plus one. To assess partner rotation, a binary variable was utilized, where one was given if the lead audit partner signing the independent auditor's report changed between consecutive fiscal years and zero if no change occurred (Dayanandan & Kuntluru, 2023; Federsel, 2025; Kang, 2023). We determined the assignment loads for a partner following the approach of Mnif (2022) and Singh et al. (2022), involving the total of audit engagements managed by the partner. We calculated audit firm tenure by taking the logarithm of consecutive fiscal years the audit firm audits the entity's financial statements, following Dayanandan and Kuntluru (2023) and Payne and Williamson (2021). We included

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essential control variables, including the company's debt ratio, which had been the subject of significant analyses, such as those by Bradbury and Kim (2023) and Federsel (2025). The reporting lag between the end of the fiscal year and the date of independent auditor reports was commonly used in recent empirical research (Singh et al., 2022). Additionally, the market-to-book equity value was considered a control variable in our analysis, consistent with the approaches taken by (Federsel, 2025).

RESULTS

The descriptive statistics presented in Table 1 reveal key insights into the dataset's central tendency and dispersion across the variables. AQT has a relatively low mean of 0.226 with minimal variability, as indicated by its standard deviation of 0.092. Similarly, MRS shows a low average value of 0.016 with a narrow spread, reflected by a 0.029 standard deviation. BOF displays a higher mean of 0.326 and moderate variability. In contrast, PAR has a 0.444 mean value and a 0.497 standard deviation. SPC has a higher average value of 4.437 with considerable spread, as shown by its standard deviation of 3.279. TEU and LVE, with means of 0.626 and 0.519, respectively, demonstrate moderate variability based on their standard deviations. REL, with a 1.971 mean value and a low standard deviation of 0.155, indicates consistency in the dataset. However, MOB presents an extremely high standard deviation of 36.656 compared to its mean of 1.782 and a highly negative value of 1,848.310.

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Minimum	Maximum
AQT	0.226	0.092	0.000	0.600
MRS	0.016	0.029	0.000	0.090
BOF	0.326	0.262	0.000	0.950
PAR	0.444	0.497	0.000	1.000
SPC	4.437	3.279	1.000	18.000
TEU	0.626	0.322	0.000	1.040
LVE	0.519	0.418	0.010	5.170
REL	1.971	0.155	1.230	2.890
MOB	1.782	36.656	-1848.310	209.060

The correlation matrix in Table 2 reveals generally weak linear relationships among the variables, with most correlation coefficients close to zero. AQT shows slight positive associations with MRS, BOF, PAR, TEU, LVE, and REL, with the strongest being LVE, while its relationship with SPC and MOB is minimal. MRS has a weak positive correlation with PAR and SPC but shows slight negative associations with BOF, LVE, and REL. Similarly, BOF and PAR display minimal correlations with other variables, with PAR showing a slightly negative relationship with SPC, TEU, and LVE. SPC demonstrates weak associations across the dataset, with a slight positive link to TEU but negative ties with BOF and LVE. TEU presents a moderate correlation

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with MRS but remains weakly associated with other variables. LVE has its strongest positive correlation with AQT and REL, though both remain weak. REL and MOB, in general, have very weak associations with other variables, implying insignificant linear connections. The weak correlations suggest low collinearity concerns within the dataset.

Table 2: Correlation Matrix

Var	AQT	MRS	BOF	PAR	SPC	TEU	LVE	REL	MOB
AQT	1.000								
MRS	0.050	1.000							
BOF	0.020	-0.075	1.000						
PAR	0.044	0.004	0.015	1.000					
SPC	-0.064	0.065	-0.105	-0.055	1.000				
TEU	0.108	0.268	0.030	-0.112	0.112	1.000			
LVE	0.379	-0.001	0.022	-0.003	-0.091	-0.018	1.000		
REL	0.209	-0.120	0.019	0.045	-0.018	-0.190	0.117	1.000	
MOB	0.004	0.002	-0.027	-0.024	0.006	-0.013	-0.028	-0.007	1.000

The empirical results reveal distinct influences of the examined variables on audit quality, as shown in Table 3. Market concentration positively affects audit quality, demonstrated by a 0.545 coefficient and a 0.000 p-value, leading to the acceptance of the first hypothesis. In contrast, branch office presence does not significantly affect audit quality, with a -0.009 coefficient and a 0.354 p-value, resulting in the rejection of the second hypothesis. Partner rotation significantly enhances audit quality, with a 0.017 coefficient and a 0.000 p-value, thus collaborating with the third hypothesis. However, the assignment loads of audit partners show a negative and statistically significant influence, reflected by a -0.002 coefficient and a 0.007 p-value, leading to the acceptance of the fourth hypothesis.

Audit firm tenure moderates the relationships in intricate ways. Specifically, tenure mitigates the positive influence of market concentration on audit quality, with a -0.436 coefficient and a 0.004 p-value, leading to the acceptance of the fifth hypothesis. Additionally, tenure amplifies the impairing impact of branch office presence on audit quality, shown by a 0.031 coefficient and a 0.021 p-value, supporting the acceptance of the sixth hypothesis. Furthermore, tenure mitigates the positive correlation between partner rotation and audit quality, with a -0.021 coefficient and a 0.000 p-value, confirming the acceptance of the seventh hypothesis. Finally, tenure strengthens the negative impact of the partner assignment loads on audit quality, with a 0.003 coefficient and a 0.000 p-value, resulting in the acceptance of the eighth hypothesis.

Several control variables are also incorporated into the analysis. Leverage shows a positive association with audit quality, as indicated by a coefficient of 0.073 and a p-value of 0.000. Reporting lag demonstrates a strong positive correlation with audit quality, with a 0.164 coefficient and a 0.000 p-value. Despite a neutral coefficient of

0.000, market-to-book equity exhibits a statistically significant effect, with a 0.000 p-value.

Table 3: Main Empirical Results

Variables	Coefficients	T-Statistics	P-Values
Cons	-0.144	-6.430	0.000
MRS	0.545	3.650	0.000***
BOF	-0.009	-0.930	0.354
PAR	0.017	4.690	0.000***
SPC	-0.002	-2.720	0.007***
MRSTEU	-0.436	-2.870	0.004***
BOFTEU	0.031	2.320	0.021**
PARTEU	-0.021	-4.320	0.000***
SPCTEU	0.003	3.570	0.000***
LVE	0.073	8.250	0.000***
REL	0.164	14.690	0.000***
MOB	0.000	5.750	0.000***

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Our regression analysis in the main empirical results yielded an adjusted R^2 of 18.53% and the F-test p-value of 0.000, indicating that the overall model is statistically significant. Although the model's explanatory power is modest, the results suggest that the independent variables collectively contribute meaningfully to explaining the variation in the dependent variable.

Numerous empirical studies have utilized going concern opinion as a proxy of audit quality (Francis, 2024), commonly represented by a binary variable (Hossain, 2023; Mohapatra, 2021). However, Chu et al. (2022) and Guo et al. (2020) point out its drawback, as it is predominantly relevant to financially distressed entities, leading to inconsistencies in hypothesis testing and weakening statistical power when both stable and distressed entities are included in the sample. To address this issue, our study assessed audit quality by emphasizing disclosures related to going concern assessments, as mentioned in the Appendix.

Table 4 compares Model A (our primary empirical results), which utilizes disclosures associated with going concern assessments, and the traditional approach of Model B, which employs a binary variable. The results demonstrate that Model A provides a more comprehensive measure of audit quality compared to Model B. Specifically, Model A exhibits a higher Adjusted R^2 (18.53% vs. 11.84%), indicating more substantial explanatory power. Several key variables, including MRS, PAR, SPC, and interactions involving TEU, are significant in Model A but not in Model B, suggesting that the disclosure-based assessment captures more relevant determinants of audit quality. These findings highlight the limitations of the traditional binary approach and underscore the advantages of going concern assessment for a more precise evaluation of audit quality.

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Table 4: The Result of the Comparison Audit Quality Measurement

Variables	Model A			Model B	
	Coefficients		P-Values	Coefficients	P-Values
Cons	-0.144		0.000	-8.932	0.000
MRS	0.545		0.000***	0.981	0.874
BOF	-0.009		0.354	0.494	0.186
PAR	0.017		0.000***	0.112	0.623
SPC	-0.002		0.007***	-0.039	0.344
MRSTEU	-0.436		0.004***	-19.072	0.012**
BOFTEU	0.031		0.021**	-0.105	0.847
PARTEU	-0.021		0.000***	-0.137	0.673
SPCTEU	0.003		0.000***	0.114	0.038**
LVE	0.073		0.000***	1.310	0.000***
REL	0.164		0.000***	3.054	0.000***
MOB	0.000		0.000***	0.001	0.422
Adjusted R2	18.53%			11.84%	

*Significant at 10%, **Significant at 5%, ***Significant at 1%

In addition, we performed multiple supplementary analyses to ascertain the validity of primary empirical findings. Firstly, we substituted the original MRS measure with an alternative based on total revenue, drawing on the methodology applied by Lee (2024). The results, presented in Table 5, consistently elaborate significant relationships among MRS, BOF, PAR, SPC, and the moderating role of TEU on their influence over audit quality, supporting the primary findings. Furthermore, control variables such as LVE, REL, and MOB maintain consistent patterns, reinforcing the stability of the results across different measurement methods.

Table 5: Alternative Measurement of Audit Market Concentration

Variables	Coefficients	T-Statistics	P-Values
Cons	-0.144	-6.390	0.000
MRS	0.383	3.200	0.001***
BOF	-0.009	-0.900	0.369
PAR	0.017	4.700	0.000***
SPC	-0.002	-2.740	0.006***
MRSTEU	-0.315	-2.200	0.028**
BOFTEU	0.032	2.350	0.019**
PARTEU	-0.021	-4.360	0.000***
SPCTEU	0.003	3.550	0.000***
LVE	0.072	8.170	0.000***
REL	0.164	14.630	0.000***
MOB	0.000	5.780	0.000***

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Secondly, we assessed the influence of the sample composition by introducing a control variable that distinguishes our samples for entities audited by Big Four and non-Big Four firms. A binary variable approach was employed, where a value of one

indicates an entity audited by a Big Four firm and zero otherwise, following with methodologies used in prior studies (Bradbury & Kim, 2023; Chen et al., 2024).

As shown in Table 6, the findings reaffirm the robustness of the primary results across various model specifications, further highlighting the relationships among MRS, BOF, PAR, and SPC and their interactions with TEU in determining audit quality. LVE, REL, and MOB continue to exhibit consistent patterns, supporting the consistency of the findings across various measurement techniques.

Table 6: Regression Analysis Controlling for Big 4 and Non-Big 4 Firms

Variables	Coefficients	T-Statistics	P-Values
Cons	-0.142	-6.290	0.000
MRS	0.803	4.860	0.000***
BOF	-0.009	-0.940	0.345
PAR	0.015	4.310	0.000***
SPC	-0.002	-2.890	0.004***
MRSTEU	-0.566	-3.460	0.001***
BOFTEU	0.031	2.270	0.024**
PARTEU	-0.019	-3.920	0.000***
SPCTEU	0.004	3.720	0.000***
LVE	0.072	8.140	0.000***
REL	0.165	14.850	0.000***
MOB	0.000	5.770	0.000***
BI4	-0.025	-2.180	0.030**

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Finally, we employed the generalized least squares (GLS) method, which corresponds with the approach adopted by Habib (2023). Table 7 displays the GLS test, further confirming the consistency of the primary findings.

Table 7: Regression Analysis using Generalized Least Squares

Variables	Coefficients	T-Statistics	P-Values
Cons	-0.130	-8.650	0.000
MRS	0.601	4.500	0.000***
BOF	-0.011	-1.490	0.137
PAR	0.017	5.040	0.000***
SPC	-0.003	-4.040	0.000***
MRSTEU	-0.496	-3.200	0.001***
BOFTEU	0.033	2.820	0.005***
PARTEU	-0.021	-4.460	0.000***
SPCTEU	0.004	4.690	0.000***
LVE	0.075	16.020	0.000***
REL	0.156	21.200	0.000***
MOB	0.000	1.840	0.066*

*Significant at 10%, **Significant at 5%, ***Significant at 1%

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The coefficients, t-statistics, and p-values remain closely aligned with the primary analysis, reaffirming the robustness of the relationships among the examined variables.

DISCUSSION

Table 3 presents the main empirical results from our hypothesis testing, emphasizing how audit market concentration, partner rotation, branch presence, and assignment loads, along with their interactions with audit firm tenure, affect audit quality. The findings of the first hypothesis are consistent with earlier studies, which identify a positive link between audit market concentration and audit quality (Bradbury & Kim, 2023; Brockbank et al., 2023). Cahan et al. (2021) also note that consolidating new audit firms can still support enhanced audit quality, even as mergers increase market concentration. Likewise, Brockbank et al. (2023) demonstrate that a concentrated audit market encourages auditors to deliver higher performance. Rajabalizadeh (2024) further highlights that fierce rivalry among audit firms expedites the publication of financial reports, a key determinant of audit quality. The results indicate that regulators are encouraged to facilitate the participation of small and medium-sized audit firms in international networks. This involvement can enhance competitiveness in the local audit market, foster global knowledge exchange and collaboration, and ultimately drive improvements in audit quality.

While the second hypothesis suggested that branch offices might negatively affect audit quality, the findings did not confirm that assumption. This outcome diverges from the findings of (Chen et al., 2024) concludes that expanding branch offices to boost competitiveness adversely impacts audit quality. It also contrasts with (Gong et al., 2023), whose statistical analysis indicates that geographically dispersed branch offices promote knowledge sharing, improving audit quality. Our findings challenge Hotelling's spatial theory (Hotelling, 1929), arguing that geographic proximity provides a competitive advantage. We argue that the extent to which branch office establishments enhance audit quality is contingent upon the effective implementation of internal audit quality systems and robust oversight from the head office.

Our empirical results for the third hypothesis correspond with prior studies demonstrating that partner rotation significantly enhances audit quality by improving the fresh look effect (Federsel, 2025; Kang, 2023). Eleftheriou et al. (2023) further support this view, noting that prolonged audit tenures reduce professional skepticism and impair fraud detection, ultimately compromising audit quality. Fan et al. (2024) suggest that mandatory partner rotation strengthens audit quality and helps mitigate the risk of stock price crashes. These findings imply that regulatory authorities may benefit from maintaining and, where appropriate, strengthening partner rotation requirements, as such measures help mitigate the risks of excessive familiarity, safeguard auditor objectivity, and reinforce public confidence in the audit process.

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The findings related to the fourth hypothesis are consistent with earlier studies indicating that inadequate assignment loads, often resulting from excessive workload, deteriorate audit quality (Heo, 2021; Mnif, 2022; Suzuki, 2024). Similarly, Singh et al. (2022) assert that auditors handling heavy workloads tend to extend the audit process, adversely impacting audit quality. Our study suggests that a higher assignment load intensifies the likelihood of audit failures and undermines audit quality. Heavy workload induces stress and fatigue, resulting in auditors adopting behaviors that diminish audit quality.

The findings of our analysis support the fifth hypothesis that a longer audit firm tenure weakens the positive impact of audit market concentration on audit quality. Bleibtreu and Stefani (2022) propose that the audit firm rotation rule helps preserve auditor objectivity while lowering market concentration. This requirement prevents prolonged engagements from contributing to heightened market dominance. However, this perspective conflicts with audit firms' strategies to maintain long-term client relationships. Additionally, Florio (2024) argues that prolonged auditor tenure intensifies clients' concentration within the audit industry, particularly among Big 4 firms, which may negatively influence audit quality.

The analysis rejects the hypothesis that the presence of audit firm branch offices adversely influences audit quality. However, the sixth hypothesis testing results indicate that audit firm tenure amplifies the negative influence of branch office presence on audit quality. Our findings correspond with Chen et al. (2024) argues that competition among audit offices often attracts lower-quality clients by issuing aggressive audit opinions, which diminishes audit quality. Our analysis suggests that in Indonesia, audit firms strategically establish branch offices within the same region to enhance local competitiveness and maintain long-term auditor-client relationships, which compromise audit quality.

This study's analysis suggests that audit firm tenure diminishes the positive influence of audit partner rotation on audit quality, leading to acceptance of the seventh hypothesis. Our results diverge from Martani (2021) and Ndaba (2021), who reveal no significant adverse impact of audit firm tenure on audit quality. Besides, our results differ from those of Brockbank et al. (2023) and Dayanandan and Kuntluru (2023), who argue that longer tenures motivate auditors to enhance their efforts and develop an improved familiarity with the client's industry, thereby improving audit quality. However, our results are consistent with the views of Jadiyappa (2021), who suggest that extended audit firm tenures harm audit quality due to audit firms prioritizing their high-paying clients, advocating for shorter tenures, and mandatory rotation to preserve audit quality. Similarly, Gipper et al. (2021) assert the practice of pseudo-rotation, where audit firms disguise long tenures through internal partner changes, ultimately undermining audit quality by reducing the "fresh look" effect. This argument corresponds with Federsel (2025), who emphasizes that firm rotation is

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essential to preventing prolonged tenure and ensuring a fresh look, as partner rotation alone is inadequate. Further, empirical evidence from Zhang et al. (2022) outlines that surpassing the mandated auditor rotation period adversely affects audit quality, as auditors are inclined to render favorable opinions to entities in exchange for higher fees, thereby raising concerns about potential collusion that could undermine their independence and objectivity. Our findings also resonate with Judge et al. (2024), who demonstrate that publicly announcing a firm's tenure with a client reduces investor confidence, as prolonged relationships threaten the firm's independence. Our study recommends that policymakers encourage regulations designed to avoid prolonged auditor–client relationships by implementing a dual rotation system, comprising both mandatory audit firm rotation and audit partner rotation.

A significant decline in audit quality emerges when a partner's assignment loads interact with prolonged tenure, reinforcing the eighth hypothesis in this study. Singh et al. (2022) similarly conclude that auditors handling excessive workloads require extended periods to finalize audits, negatively affecting audit quality. The outcome corresponds with prior studies indicating that a high workload disrupts the partner's ability to manage audits effectively, causing a decreased audit quality (Heo, 2021; Mnif, 2022; Suzuki, 2024). Additional studies report that prolonged auditor-client relationships degrade audit quality over time (Payne & Williamson, 2021). These findings suggest that excessive workload and extended auditor tenure are critical in diminishing audit quality, emphasizing the risks of overloaded assignments.

Overall, we conducted extended analyses to confirm the reliability and stability of the primary empirical results. Specifically, we implemented alternative measures of audit market concentration (Table 5), categorized the sample entities by Big Four and non-Big Four auditors (Table 6), and applied the GLS method (Table 7). These robustness checks collectively reinforce the validity of our main findings.

CONCLUSION

This empirical analysis investigated how audit firm tenure moderates the effects of audit market concentration, branch offices, partner rotation, and assignment loads on audit quality in publicly listed entities in Indonesia, covering 2018 to 2022. The analysis demonstrates that audit market concentration and partner rotation positively influence audit quality, while assignment loads have a detrimental impact. Furthermore, the study finds that audit firm tenure diminishes the positive influence of market concentration and partner rotation on audit quality. Extended audit firm tenure also exacerbates the negative impacts of branch offices and assignment loads, highlighting the unfavorable implications of prolonged auditor-client relationships.

The study recommends that policymakers promote policies that prevent prolonged relationships between audit firms and their clients by enforcing dual mandatory

rotation, reassessing branch office strategies, and formulating policies to limit assignment workloads to maintain high audit quality. Investors may benefit from using these findings to determine the impact of a prolonged auditor-client association on their investment decisions.

This analysis is limited to entities listed on the Indonesian Stock Market covering 2018 and 2022, which may affect the generalizability of the outcomes to other markets. Additionally, it relies on publicly disclosed information, which may not fully account for qualitative factors influencing audit quality, such as internal audit firm policies or the nature of auditor-client relationships. Future research could investigate audit quality determinants in other emerging markets to facilitate cross-country comparisons. Longitudinal studies extending beyond the 2018–2022 period may also reveal trends in audit practices over time. Moreover, qualitative approaches such as interviews with audit professionals could provide deeper insights into how firm-level policies influence audit outcomes. Lastly, examining the role of digital transformation in auditing and its implications for audit quality would be a valuable extension of this research.

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APPENDIX: MEASURING AUDIT QUALITY USING A GOING CONCERN ASSESSMENT SCORE PROXY UNDER SA 570 (IAPI, 2021)

Financial (with a total of 8 scores):

1. Net liability position (total liabilities - total assets).
2. Negative working capital.
3. Current liabilities outweigh total assets.
4. Deficit position.
5. Recurring losses for two consecutive years.
6. High leverage ratio.
7. A current ratio of less than 1.
8. Negative EBITDA ratio.

Operations (with a total of 8 scores):

1. Management intends to dissolve the entity or discontinue operations.
2. Deficiency in replacing key executives.
3. Decline of a significant market, major customers, franchises, licenses, or major suppliers.
4. Labor deficiency.
5. Insufficiencies of goods/inventories.
6. Arrival of exceptionally successful rivals.
7. Asset damage due to uninsured or underinsured natural disasters.
8. Significant revenue from related-party transactions.

Financing (with a total of 10 scores):

1. Loans with fixed repayment times nearing the due date have little likelihood of renewal or repayment, or are overdependent on short-term borrowing to support long-lived assets.
2. The creditor withdraws financial support.
3. Long-overdue unpaid dividends.
4. Defaulting on creditor payments at the scheduled date.
5. Non-compliance with the loan agreement.
6. Failure to secure funding for critical new product development or necessary investments.
7. Creditors disapproved of debt restructuring.
8. Debt conversion to equity.
9. Significant market capitalization declined by over 30% in the current year.
10. Loans in foreign currencies are exposed to foreign exchange rate fluctuations without

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hedging.

Cash Flows (with a total of 5 scores):

1. Negative cash flow from operations.
2. Significant decrease in asset values used to yield cash flows.
3. Change in transactions with suppliers, from credit transactions to cash transactions upon delivery.
4. Operating and investing cash flows are funded by cash flow from financing.
5. Insufficient cash flow from customers to cover interest expenses.

Legal Matters and Regulatory Non-Compliance (with a total of 4 scores):

1. Violation of meeting capital requirements or other regulatory provisions, such as solvency or liquidity obligations.
2. Legal proceedings faced by the entity that, if successful, could produce liabilities against the entity that are not likely to be met by the entity.
3. Changes in legislation or state policies are to affect the entity adversely.
4. Pending tax audit cases in court.

Impairment of Assets (with a total of 3 scores):

1. Impairment of non-financial assets.
2. Significant sale of fixed assets.
3. Discontinued operations segment.

Reporting (with a total of 3 scores):

1. A delay in audited financial statements reporting less than three months.
2. A delay in audited financial statements reporting more than six months.
3. Delay in the interim financial statements reporting.

Opinion (with a total of 4 scores):

1. Unmodified opinion, with an emphasis-of-matter paragraph.
2. Modified opinion, except for.
3. Modified opinion, disclaimer of opinion.
4. Modified opinion, adverse opinion.