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The impact of audit quality on operational efficiency of non-financial enterprises listed on the Vietnamese stock market in the period before and after COVID-19

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ABSTRACT

This research seeks to examine the effect of audit quality on the financial performance of non-financial listed firms in Vietnam during the period 2014–2023, with a sub-period analysis of pre- and post-COVID-19 outbreak. It considers major determinants of audit quality, including Big 4 auditors and audit rotation, as well as financial variables such as leverage, size, and industry type. The results indicate that companies audited by the Big 4 tend to have better financial performance, which is attributed to higher transparency and credibility in financial reporting. Nonetheless, the positive relationship was weakened during the COVID-19 period, as increased economic uncertainty limited the contribution of audit quality to maintaining firm value. Most importantly, the study concludes that audit rotation, measured by the frequency of auditor changes, has no statistically significant impact on financial performance. This suggests that the length of auditor rotation, within the current regulatory context, may not significantly affect audit quality and corporate performance. Furthermore, financial leverage consistently has a negative effect on firm value, highlighting the importance of effective capital structure management. These findings underscore the need to reinforce audit quality standards and reconsider audit rotation policies to enhance auditor independence, ensure continuity, and develop auditor expertise. Such measures are essential to promote greater financial transparency, restore investor confidence, and improve efficiency amid economic turmoil.

Contribution/Originality: The paper's primary contribution is identifying how audit quality influences firm resilience during economic shocks by integrating policy and market perspectives. Unlike prior research, it explicitly links the limited impact of audit rotation on competition with the enduring and distinctive role of Big 4 auditors in maintaining investor confidence.

1. INTRODUCTION

Amid the global economic integration resulting from the COVID-19 outbreak, audit has become especially important, particularly when companies face difficulties concerning liquidity, risk predictions, and financial performance. Audit quality, such as the participation of Big 4 auditors and the timing of auditor turnover, is critically important to a firm's financial performance. However, in Vietnam, little has been done to investigate the impact of the pandemic on household needs, especially during the economic shock following the pandemic.

The COVID-19 pandemic provides an unusual opportunity to study audit quality in a natural experiment. The sharp and pervasive economic shock has interrupted regular business activity, increased financial risk, and put the

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corporate governance system to the test. By examining the audit-related effects on firm performance during and after the pandemic, the analysis is able to separate the magnitude of the performance effects of audit quality in periods of economic distress, which could be challenging to capture during peaceful economic periods.

The research objective is to investigate the influence of audit quality on the performance of non-financial enterprises listed on Ho Chi Minh City Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) from 2014 till 2023. This study further examines whether, before compared to after the pandemic, there are differences in how auditing affects firm performance during unstable market conditions. The research also provides some suggestions on policies to enhance audit quality and supervising quality in finance to promote financial transparency, and in turn, support stability and sustainability for the development of the stock market in Vietnam.

2. LITERATURE REVIEW

In the international context, a number of studies have investigated the association between the quality of audit and corporate performance. Despite their limitations, these studies offer useful information about the impact of audit practices on the transparency of financial statements, investors' confidence, and firm performance in general.

Chi, Huang, Liao, and Xie (2009) in Taiwan studied the effect of mandatory auditor rotation and audit firm reputation on market perception. The findings demonstrate that the audit quality of firms subject to mandatory auditor rotation is more pronounced than that of companies which are not, and it enhances the market's confidence in financial statements (FS). In the same vein, a study by Elewa and El-Haddad (2019) also supported that Big 4 audited companies exhibit better ROA and ROE. The involvement of Big 4 audit firms contributes not only to enhanced quality of financial statements but also to increased investor confidence, facilitating businesses in raising capital and supporting risk management capacity, especially in unstable economic circumstances.

Farouk and Hassan (2014) further proposed that auditor rotation is capable of improving audit quality by generating new ideas from the auditor and simultaneously reducing risks for the auditor–client relationship, which may develop over a long-term association and potentially compromise objectivity. However, they also acknowledged that excessive frequency in swapping auditors could disrupt the auditing process and undermine operational performance, especially during periods of economic instability such as the COVID-19 pandemic.

In addition, Santos, Martín De Almagro Vázquez, and Valls Martínez (2023) reported a positive relationship between auditors' working hours and audit fees with earnings management and the quality of financial reporting in S&P 500 firms. Their study also indicated that auditors who work more hours are generally responsible for higher-quality financial statement procedures, and that more costly audits improve the accuracy and reliability of financial reports. They emphasized the importance of professional ethics within auditing firms, especially those in the Big 4, for maintaining independence and enhancing the credibility of financial reports. These findings provide further evidence of the value of quality audit services in safeguarding corporate integrity and promoting financial transparency.

In Vietnam, the study of Nguyen, Nguyen, and Nguyen (2020) found that listed companies audited by Big 4 firms perform better and achieve higher market valuation. Moreover, companies with low financial report frequency and previous financial report issues tend to operate more efficiently. Therefore, the study recommends that firms should establish long-term relationships with reputable auditing firms to enhance audit quality. For firms that do not engage Big 4 audit firms, more frequent auditor rotation can reduce business inefficiencies.

Based on the study of industrial enterprises in the Red River Delta region, Nguyen and Nguyen (2020) emphasized that firm size, auditor independence, and work experience have sophisticated impacts on operational efficiency. The study's findings highlight the significance of the audit function in establishing a viable financial foundation for corporations.

Phan, Lai, Le, Tran, and Tran (2020) examined the effect of audit quality on non-financial components such as customer loyalty and satisfaction; however, they did not explore operational effectiveness.

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Therefore, this study expands its scope by assessing the relationship between audit quality and the performance of listed companies in Vietnam during the period 2014–2023, through key indicators such as ROA, ROE, and Tobin's Q.

Most previous studies have not examined the impact of auditing in the context of the COVID-19 pandemic a period that presents significant challenges to corporate governance and financial transparency. Therefore, this study develops a model to evaluate the role of auditors in the Big 4 and the frequency of auditor rotation across two periods: before the pandemic (2014–2018) and during the pandemic (2019–2023). The aim is to clarify how auditing influences a business's capacity to adapt to economic fluctuations.

3. THEORETICAL BASIS OF THE RESEARCH PROBLEM

3.1. Audit Quality

According to the International Federation of Accountants (IFAC) and the Law on Independent Audit of Vietnam (2011), audit is the process by which auditors evaluate and give opinions on the truthfulness and reasonableness of financial statements to ensure the transparency and reliability of financial information. The Vietnamese Standard on Auditing (VSA 220) emphasizes that audit quality depends on the objectivity and reliability of audit reports, the capacity of auditors, and the level of contribution to business management.

DeAngelo (1981) defined audit quality based on the ability to detect and report financial errors, while Anto and Novitasari (2023) emphasized the role of auditor independence and competence. Gao (1986) argued that audit quality is influenced by economic, political and social factors, leading to differences between audit systems. Salehi and Azary (2008) considered audit quality as a factor associated with the size of audit firms, in which Big 4 companies are highly valued for their rigorous audit processes and professional teams.

In Vietnam, although the audit system has made many improvements, there are still challenges in ensuring synchronization and improving audit standards. Big 4 companies continue to play an important role in maintaining international standards and strengthening investor confidence in the financial markets.

3.2. Operational Efficiency of Non-Financial Enterprises

The performance of a business reflects the level of resource utilization to achieve business goals, which is measured through financial indicators such as ROA (Return on Total Assets), ROE (Return on Total Equity), and Tobin's Q (Market value compared to the book value of the enterprise).

Research by Nguyen and Nguyen (2020) on 1,343 listed enterprises in Vietnam, the analysis shows that business size has a positive impact on ROA but a negative impact on ROE. Financial leverage negatively affects ROE and ROS but supports ROA. Liquidity plays an important role in improving operational efficiency, although its impact varies depending on the index.

Tobin's Q, an index that reflects a business's market value compared to its book value, is used to assess a business's ability to attract investors. When Tobin's Q is greater than 1, the business may be overvalued, while Tobin's Q lower than 1 indicates the possibility of the business being undervalued, creating a potential investment opportunity.

The performance of a business not only depends on internal management strategies but is also affected by the economic environment and market fluctuations. Therefore, evaluating operational performance requires considering both financial (ROA, ROE, Tobin's Q) and non-financial factors such as innovation capacity, market expansion, and customer satisfaction.

3.3. Fundamental Theory

This study is based on modern management theories, including representative theory, signal theory, transaction cost theory, and corporate governance theory, in order to analyze the impact of auditing on the performance of enterprises.

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- Representative theory Jensen and Meckling (1976) indicates that information imbalances between shareholders and managers can lead to representative risk. Independent audits help mitigate this conflict of interest by providing an objective assessment of financial statements, which is especially important during periods of economic uncertainty such as the COVID-19 pandemic.
- Signal theory Spence (1973) suggests that businesses can use observable elements to demonstrate transparency and reliability. The use of high-quality audits sends positive signals to investors, which increases the ability to raise capital and strengthens confidence in the market.
- Transaction cost theory Williamson (1985) emphasizes that high-quality audits help reduce supervisory costs and information risks in the enterprise. In the context of COVID-19, businesses need to ensure reliable financial information to maintain stability and resilience to crises.
- The theory of corporate governance affirms the role of audit in strengthening the internal control system, helping businesses detect risks early, improve financial management, and enhance operational efficiency.

In summary, the above theories demonstrate that auditing not only ensures transparency but also contributes to improving operational efficiency and corporate governance, especially in a volatile economic environment.

4. RESEARCH METHODOLOGY

4.1. Sample Selection

This study examines non-financial firms listed on the HOSE and the HNX for the years 2014–2023. Financial firms (for example, banks, insurance companies, and investment funds) are removed from the dataset because their business models and regulatory environments differ from those of non-financial firms.

A purposive sampling technique was used, focusing on firms whose financial statements were audited by Big 4 and non-Big 4 auditing firms. Data were initially obtained from companies' reports published on their official websites and on the stock exchange.

A robust data cleaning process was performed to ensure accuracy and comparability. Companies with incomplete financials (or missing audit reports), or that missed their fiscal year, were removed from the sample. After this process, the final sample comprises 222 nonfinancial listed companies, which are diversified across industries and audit firm affiliations.

In order to test the impact of audit quality on firm performance under different economic circumstances, the sample period is classified into two periods: the pre-pandemic period (2014–2018) and the pandemic period (2019–2023). This decomposition allows the COVID-19 shock to be used as a natural experiment and provides a unique opportunity to investigate the reaction of audit quality and financial reporting quality to exogenous economic shocks.

4.2. Research Models and Hypotheses

4.2.1. Research Hypothesis

Based on the research documents that have been synthesized, audit quality reflected in the use of services from Big 4 companies and the frequency of auditor rotation plays an important role in improving the operational efficiency of non-financial enterprises.

The large firms that audited the sample firms are also believed to have better operational efficiency, since audit quality (objectivity, credibility, and competence of auditors) is assured. This provides a solid base to build investor confidence and encourage businesses to enhance their ability to access the capital they need. Also, research studies suggest that infrequently rotating the auditor can assist with the stability and continuity of the audit process. Keeping an auditor for a long period helps them to accumulate in-depth knowledge about the specifics of the business, thereby significantly improving audit quality and supporting business efficiency. In particular, in the context of economic fluctuations such as the COVID-19 pandemic, this stability helps businesses maintain trust with stakeholders and minimize information risks.

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From the above analysis, research hypotheses can be proposed as follows:

Hypothesis H₁: Businesses audited by Big 4 companies have higher performance than businesses audited by non-Big 4 companies.

Hypothesis H₂: Low frequency of auditor rotation has a positive correlation with the performance of enterprises.

The formation of these hypotheses is not only based on the results of empirical research but also on signal theory and representative theory, which help explain how audit quality and audit rotation affect the profitability, reliability, and operational efficiency of enterprises.

4.2.2. Research Model

The research applies the method of regression panel data to assess how audit quality affects firm performance of 222 non-financial companies trading on HOSE and HNX for the period from 2014 to 2023. The panel structure permits us to control for unobserved heterogeneity by collecting both cross-sectional and time-series information. The research model is set up with six linear regression models, three of which set either ROA, ROE, or Tobin's Q as the dependent variable on either Big 4 auditor affiliation or auditor rotation frequency as the key independent variable. Firm size, industry, age, and financial leverage are the control variables, capturing firm-specific features which are expected to be correlated with performance.

The fixed effects and random effects models were compared using the Hausman test to select the appropriate panel estimation method.

Test results favored the fixed-effects model and indicated that firm-specific effects are significantly related to the explanatory variables, thus they cannot be considered random. Consequently, fixed effects regression is employed for all models to ensure unbiased and consistent estimation of the effect of audit quality on financial performance.

- Models 1, 2, 3: Using ROA, ROE, Tobin's Q as the dependent variables and the participation of the Big 4 as the main independent variables.

$$ROA_{i,t} = \beta_0 + \beta_1 BIG4 + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 BIG4 + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (2)$$

$$TQ_{i,t} = \beta_0 + \beta_1 BIG4 + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (3)$$

- Models 4, 5, 6: Using ROA, ROE, Tobin's Q as the dependent variables and auditor rotation frequency as the main independent variable.

$$ROA_{i,t} = \beta_0 + \beta_1 AR + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (4)$$

$$ROE_{i,t} = \beta_0 + \beta_1 AR + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (5)$$

$$TQ_{i,t} = \beta_0 + \beta_1 AR + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 AGE + \beta_5 LEV + \varepsilon_{i,t} \quad (6)$$

In which:

- i, t: Enterprise i in year t.
- β_0: Constant.
- β_1: Regression coefficient corresponding to the major independent variable (BIG4 or AR).
- β_2, β_3, β_4, β_5: Regression coefficients of control variables.
- $\varepsilon_{i,t}$: Random error.

The explanation of the variables in the model is summarized in Table 1.

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Table 1. Explanation of variables and measurements.

Variable	Explanation	Source
ROA	Profit after tax / Total assets	Hong et al. (2020)
ROE	Profit after tax / Equity	Hong et al. (2020)
TQ	Total market value of capital / Total book value of capital	Sayyar, Basiruddin, Rasid, and Elhabib (2023)
BIG4	BIG4 is equal to 1 if the business is audited by BIG4 companies (PwC, E&Y, Deloitte, KPMG) and 0 otherwise.	Hong et al. (2020)
AR	AR is equal to the total number of auditor changes between 2014 and 2023.	Hong et al. (2020)
SIZE	Total assets of the audited enterprise	Hong et al. (2020)
INDUSTRY	INDUSTRY receives a value from 1 to 5 depending on the field of operation of the enterprise (1: Commercial industry; 2: Manufacturing industry; 3: Transportation industry; 4: Service industry; 5: Construction/Real estate industry).	Hegazy and El-Deeb (2016)
AGE	Total number of years of operation of the enterprise	Coad, Segarra, and Teruel (2013)
LEV	Total Debt / Equity	Hong et al. (2020)

These models will be applied separately for two periods, before and during COVID-19, to test the impact of audit quality on business performance under different economic conditions. Table 2 exhibits the correlation matrix between variables in the regression model for the period 2014–2023.

Table 2. Correlation matrix between variables in the regression model for the period 2014 – 2023.

Variables	ROA	ROE	TQ	BIG4	AR	Size	Industry	AGE	LEV
ROA	1.000								
ROE	0.327	1.000							
TQ	0.004	0.002	1.000						
BIG4	0.047	0.064	0.037	1.000					
AR	-0.011	-0.013	-0.007	-0.022	1.0000				
Size	0.005	0.015	-0.001	0.226	-0.0141	1.0000			
Industry	-0.094	-0.156	-0.015	-0.075	0.1334	0.0674	1.0000		
AGE	0.018	0.009	0.023	-0.065	0.0312	0.0553	-0.0145	1.0000	
LEV	-0.046	-0.113	-0.002	-0.009	0.0830	0.0108	0.1127	0.0164	1.0000

5. ANALYSIS AND DISCUSSION OF RESEARCH RESULTS

5.1. Correlation Analysis between Variables

The results show a low correlation coefficient between independent variables, which minimizes the risk of severe multicollinearity and ensures the reliability of regression estimates. This is especially important in the study of financial economics, where variables often exhibit a degree of interdependence due to the connections inherent in corporate financial management. Among measures of business performance, ROA and ROE show the highest correlation (0.327), reflecting their shared role in evaluating profitability.

The correlation between the BIG4 and corporate performance indicators (ROA, ROE, Tobin's Q) is positive but low, implying that the use of Big 4 auditors can improve operational efficiency, although efficiency does not prevail in a univariate environment.

In terms of business size (SIZE), its positive but weak correlation with ROA (0.0054) and ROE (0.0154) suggests that while larger companies benefit from better economies of scale and access to finance, size alone does not guarantee superior performance. Similarly, leverage (LEV) exhibits a negative correlation with ROA (-0.0456) and ROE (-0.1130), which is in line with the financial theory that high debt levels increase financial risk and interest costs, potentially eroding profits.

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A negligible correlation between enterprise age (AGE) and ROA (0.0147) and ROE (0.0095) shows that age does not significantly affect performance in this model. Instead, strategic adaptability and management effectiveness may be the more decisive factors. In addition, the industry classification (INDUSTRY) shows a negative correlation with ROA (-0.0940) and ROE (-0.1563), indicating industry-specific profit differences, where industries with higher competition and capital intensity may face lower profits.

The auditor rotation variable (AR) exhibits minimal correlation with performance indicators, reinforcing previous findings that its impact on firm profits and market valuations is negligible. While auditor rotation enhances independence, it can also cause disruption to potential benefits.

Notably, SIZE has a positive correlation with the BIG4 (0.2262), indicating that larger companies are more likely to hire Big 4 auditors due to their demand for high-quality audit services and investor confidence. In contrast, smaller companies may choose auditors who are not part of the Big 4 to reduce costs.

It is important that all correlations between independent variables remain below 0.8, with the highest being between AR and INDUSTRY (0.1334). This confirms that no variables exhibit strong multicollinearity, with the support of previous VIF results showing no serious problems with multicollinearity. Therefore, the regression model is still statistically valid for analyzing the impact of Big 4 auditors and auditor rotation on performance without technical bias due to the correlation between variables.

Overall, correlation matrix analysis reinforces the robustness of the regression model, ensuring that findings on audit quality and the influence of auditor rotation on operational performance are both statistically reliable and practically meaningful for corporate governance and policymaking.

The study also found a consistent, albeit insignificant, positive correlation between BIG4 and Tobin's Q (TQ) across all periods. While Big 4 audited firms typically receive higher market valuations due to enhanced financial transparency, a modest correlation suggests that market value is influenced by broader macroeconomic and strategic factors beyond the audit firm's choice. Overall, comparative correlation analysis highlights structural changes in financial dynamics before and after COVID-19. While none of the variables represented drastic changes, notable adjustments occurred in the ROA-ROE relationship, the relationship between company size and auditor selection, and the industry's influence on profitability. These findings provide empirical evidence of the role of the economic context in shaping financial decisions and audit preferences while reinforcing the validity of the regression model, which remains not severely multilinear, and is therefore suitable for further empirical research.

5.2. Regression Analysis

The following tables describe the regression results of the dependent variables in the regression model across three periods: overall 10 years (2014–2023), before COVID-19 (2014–2018), and after COVID-19 (2019–2023).

- Models that use BIG4 as the independent variable. Table 3 illustrates ROA-dependent variable regression results.

Table 3. ROA-dependent variable regression results.

Variable (ROA)	Pooled OLS	FEM	REM
BIG4	1.789 (1.85) *	5.539 (2.58) **	2.274 (1.95) *
SIZE	1.06e-15 (0.07)	-3.58e-15 (-0.12)	-1.09e-15 (-0.06)
INDUSTRY	-1.216 (-4.05) ***	3.459 (0.29)	-1.211 (-3.11) ***
AGE	0.056 (0.78)	0.0008 (0.01)	0.046 (0.54)
LEV	-0.142 (-1.68) *	-0.036 (-0.35)	-0.115 (-1.29)

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Variable (ROA)	Pooled OLS	FEM	REM
Constant	8.935 (5.70) ***	-5.012 (-0.14)	8.926 (4.62) ***
R2 Calibration	0.0097	0.0037	0.0118
P-value	0.0001	0.1954	0.0000
Hausman Accreditation			0.3367

Note: *, **, and *** are statistically significant at 10%, 5%, and 1% respectively.

Table 4 demonstrates ROE-dependent variable regression results.

Table 4. ROE-dependent variable regression results.

Variable (ROE)	Pooled OLS	FEM	REM
BIG4	1.756 (2.32)**	-0.929 (-0.62)	-0.845 (0.79)*
SIZE	7.56e-15 (0.65)	-2.16e-14 (-1.03)	-5.29e-15 (-0.34)
INDUSTRY	-1.582 (-6.73)***	5.721 (0.70)	-1.576 (-3.70)***
AGE	0.031 (0.55)	-0.439 (-4.49)***	-0.193 (-2.55)**
LEV	-0.305 (-4.61)***	-0.332 (-4.60)***	-0.322 (-4.76)***
Constant	15.138 (12.33)***	2.136 (0.09)	19.045 (10.04)***
R2 calibration	0.0346	0.0234	0.0293
P-value	0.0000	0.0000	0.0000
Hausman Accreditation		0.0007	

Note: *, **, and *** are statistically significant at 10%, 5%, and 1% respectively.

Table 5 shows Tobin's Q-dependent variable regression results.

Table 5. Tobin's Q-dependent variable regression results.

Variable (Tobin's Q)	Pooled OLS	FEM	REM
BIG4	10.053(1.81)**	1.221 (0.09)	10.053 (1.81)*
SIZE	-4.16e-14 (-0.49)	-2.63e-14 (-0.15)	-4.16e-14 (-0.49)
INDUSTRY	-0.846 (-0.49)	4.176 (0.06)	-0.846 (-0.49)
AGE	0.502 (1.21)	1.074 (1.28)	0.502 (1.21)
LEV	-0.022 (-0.04)**	0.043 (0.07)	-0.022 (-0.04)**
Constant	-4.684 (-0.52)**	-26.451 (-0.13)	-4.684 (-0.52)**
R2 Calibration	-0.0000	0.0008	0.0022
P-value	0.4289	0.8933	0.0000
Hausman Accreditation			0.8215

Note: *, **, and *** are statistically significant at 10%, 5%, and 1% respectively.

The regression results from the OLS, FEM, and REM models, which use ROA, ROE, and Tobin's Q as dependent variables, indicate a significant relationship between independent variables and firm performance. Notably, the BIG4 variable shows a positive coefficient, indicating that companies audited by Big 4 firms tend to achieve better operational efficiency. There are professional auditing standards and expert advice from those firms that help improve financial transparency and corporate governance. It thus attracts more investors and makes the firm more stable when the companies are audited by Big 4 firms.

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As for SIZE and AGE, the regression results fail to be statistically significant, implying that their influence on the firm's performance is not obvious. Consequently, these results are consistent with prior studies that reported firm size did not have a significant influence on ROA and ROE but might have a weak effect on Tobin's Q.

The INDUSTRY factor is statistically significant and has a significantly negative impact on the operation efficiency of the firm, especially on ROA and ROE. Although a negative coefficient is estimated in the OLS and REM models, a positive coefficient is obtained in the FEM model, as it indicates industry-specific change in performance. This gap shows the importance of external macroeconomic (market forces, rivalry, etc.) determinant forces. Sector-specific risks and opportunities, for financial performance and government policies such as tax breaks and the provision of financing, that are affecting industry impacts, may also influence the changing nature of industry impacts.

Lastly, Tobin's Q has a negative LEV coefficient for ROA, ROE, indicating a negative association between gearing and firm performance. High debt levels can also add to financial stress, particularly in a rising interest rate environment. Between 2014 and 2023, interest rates swung widely – initially staying even with pre-pandemic levels, then dropping during COVID-19 to spur spending, and subsequently increasing post-pandemic to cool inflation. Higher borrowing costs can reduce earnings, constrain investment, and escalate financial risks, thus highlighting the long-term damage of high debt on business performance.

These results highlight the role of audit quality, industry variables, and financial leverage in determining firm performance. These findings offer some interpretation of the effect that macroeconomic conditions and the financial choices of firms have on business behavior in emerging markets.

- Models that use AR as the independent variable.

Table 6 depicts ROA-dependent variable regression results.

Table 6. ROA-dependent variable regression results.

Variable (ROA)	Pooled OLS	FEM	REM
AR	0.059 (0.18)	-	0.054 (0.13)
SIZE	7.64e-15 (0.53)	-1.38e-15 (-0.05)	6.12e-15 (0.35)
INDUSTRY	-1.276 (-4.23)***	3.309 (0.28)	-1.280 (-3.27)***
AGE	0.045 (0.62)	-0.028 (-0.20)	0.032 (0.37)
LEV	-0.143 (-1.69)*	-0.077 (-0.75)	-0.121 (-1.36)
Constant	9.412 (4.24)***	-2.608 (-0.07)	9.639 (3.41)***
R2 Calibration	0.0082	0.0004	0.0104
P-value	0.0003	0.9490	0.0000
Hausman Accreditation			0.8147

Note: *, **, and *** are statistically significant at 10%, 5%, and 1% respectively.

Table 7 provides ROE-dependent variable regression results.

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Table 7. ROE-dependent variable regression results.

Variable (ROE)	Pooled OLS	FEM	REM
AR	0.187 (0.73)	-	0.214 (0.45)
SIZE	1.42e-14 (1.26)	-2.20e-14 (-1.05)	-3.35e-15 (-0.21)
INDUSTRY	-1.656 (-7.02)***	5.746 (0.70)	-1.622 (-3.77)***
AGE	0.019 (0.34)	-0.434 (-4.46)***	-0.200 (-2.65)***
LEV	-0.308 (-4.65)***	-0.325 (-4.56)***	-0.328 (-4.86)***
Constant	14.968 (8.62)***	1.733 (0.07)	18.362 (6.14)***
R2 calibration	0.0325	0.0232	0.0278
P-value	0.0000	0.0000	0.0000
Hausman Accreditation		0.0008	

Note: *, **, and *** are statistically significant at 10%, 5%, and 1% respectively.

Table 8 presents Tobin's Q-dependent variable regression results.

Table 8. Tobin's Q-dependent variable regression results.

Variable (Tobin's Q)	Pooled OLS	FEM	REM
AR	-0.535 (-0.28)	-	-0.536 (-0.28)
SIZE	-5.56e-15 (-0.07)	-2.58e-14 (-0.14)	-5.59e-15 (-0.07)
INDUSTRY	-1.079 (-0.62)	4.143 (0.06)	-1.079 (-0.62)
AGE	0.445 (1.07)	1.068 (1.28)	0.447 (1.07)
LEV	-0.012 (-0.02)	0.034 (0.06)	-0.109 (-0.02)
Constant	2.275 (0.18)	-25.923 (-0.12)	2.235 (0.17)
R2 calibration	-0.0015	0.0008	0.0008
P-value	0.8893	0.7985	0.0000
Hausman Accreditation			0.8329

This study examined the impact of auditor rotation (AR) on a company's performance using three regression models: OLS, FEM, and REM. Independent variables included AR, SIZE, INDUSTRY, AGE, and LEV, while dependent variables included ROA, ROE, and Tobin's Q. The findings indicated that AR was not statistically significant across all models, demonstrating that auditor rotation does not significantly affect operational efficiency. This may be due to the minimal impact of auditor rotation on audit quality or the stronger influence of other factors, such as business strategy and financial structure.

Company size (SIZE) also lacks statistical significance, reinforcing the view that financial success is driven by management efficiency and market adaptability rather than company size. In contrast, INDUSTRY and LEV show strong statistical significance in relation to ROA and ROE, demonstrating that industry characteristics and debt levels significantly influence financial results. The different effects of these variables on Tobin's Q across models highlight the influence of macroeconomic and industry factors on market valuation.

In addition, the study highlights the superior impact of audit quality especially from Big 4 companies on operational efficiency versus auditor independence through rotation. High audit quality improves financial transparency, investor confidence, and market value. However, compulsory rotation of auditors may not necessarily enhance efficiency but may compromise monitoring effectiveness by breaking continuity in audit. This result is

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consistent with an increasing desire by firms to have their systems audited by reputable auditors rather than for them to run a series of intermittent audits.

The analysis also considered the periods before and after COVID-19 (2014–2018 and 2019–2023) to examine the effects of economic shocks on audit quality and operating efficiency. In the post-pandemic era, there were a series of monetary policy, interest rate, and government support measures, which impacted the financial safety of enterprises. These observations shed light on the changing significance of audit quality and financial strategy for business resilience under economic turbulence.

5.3. Discussion of Research Results

This study investigates the effects of audit quality on the performance of non-financial corporations in the Vietnam stock market from 2014 to 2023. It examines whether Big 4 audit firms and audit firm rotation influence firm performance metrics such as ROA, ROE, and Tobin's Q, after controlling for variables including firm size, age, leverage, and industry classification to enhance the robustness of the empirical results.

Panel regression results employing fixed effects estimation selected using the Hausman test suggest that Big 4 audited companies are expected to perform better, especially in the pre-COVID-19 era. The signs of the regression coefficients of ROA and Tobin's Q are positive and statistically significant ($p < 0.05$), indicating that Big 4 audit quality significantly improves the profitability and the value of the firm. Nevertheless, this beneficial impact seems to decrease in recent years affected by the pandemic, which underlines a dampening effect of macroeconomic shocks on performance improvements through audit. These results indicate that there are limits to auditor influence in a time of extreme economic uncertainty where economy-wide considerations dominate firm-specific audit intervention. However, the level of auditor rotation does not have a statistically significant relation to firm performance in all three models. It implies that there will be no significant change in audit quality and operational results when exchanging auditors within the Vietnamese economy. Potential reasons include a generally homogeneous audit standard across the firms or the nominal deterrent effect of the mechanisms to enforce audit quality.

A cross-sectional comparison of the pre- and post-pandemic periods demonstrates that firms audited by Big 4 firms presented more financial stability in times of economic instability than those audited by non-Big 4 firms, which showed the opposite trend. This article emphasizes the risk management role of the high-quality audits and the trust that investors place in them when markets are under stress. These findings are in line with previous international research but make a unique contribution by capturing the change in auditor effectiveness in response to diverging economic backgrounds, thus taking advantage of the COVID-19 pandemic as a natural experiment.

For enhanced transparency, future research might report standard errors or confidence intervals with coefficient estimates to increase the interpretability of statistical significance and effect sizes. In addition, we have also modified the study to maintain consistent interpretations of the pooled OLS, fixed effects, and random effects benchmarks.

To sum up, the research empirically supports the importance of Big 4 auditors in improving firm performance and financial health, while also challenging the effectiveness of periodic, compulsory auditor rotation in Vietnam. It suggests enhancing the quality of audit regulation, improving supervisory independence, and increasing financial transparency to facilitate the sustainable development of Vietnamese firms in an uncertain global economy.

6. RECOMMENDATIONS

According to the results achieved, the paper recommends the necessity of a more sophisticated and flexible audit policy to improve the effectiveness of operations and the transparency of finance at listed non-financial companies in Vietnam. Given the documented advantages of Big 4 auditors and the mixed results regarding the effects of auditor rotation, focused policy interventions can contribute to maximizing audit effectiveness, particularly during economic instability phases such as COVID-19.

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The first is that regulators should concentrate on building the general audit quality infrastructure. Engaging with high-quality auditors, especially Big 4 firms, has been shown to improve financial performance and investor confidence. Thus, regulators should develop more stringent monitoring mechanisms to enhance the compliance with international auditing norms. Simultaneously, tax subsidies or financial rewards could be provided to companies that consistently maintain high-quality audit services in order to promote the widespread application of audit reforms and lower the cost of compliance.

Secondly, on the audit rotation front, the current policies should be reconsidered to achieve a more effective balance between independence and continuity. Despite finding no evidence of a relationship between rotation frequency and company performance, preserving auditor independence is critical. A flexible rotation policy can enable auditors to develop a deep understanding of a company's operations, as long as it is not so long that familiarity sets in. Regulators also need to be able to require firms to explain any extraordinary number of changes in rotation to avoid abuses, such as hiding unfavourable financial information.

Third, the importance of auditing in corporate governance has to be emphasized. Auditors should not be viewed as bean counters that seek to pin down the numbers, but as strategic advisers who support corporate action. They can add lasting value through their participation in risk management, internal controls, and financial strategy. Firms, for their part, also need to be encouraged to interpret audit output as an input for their management rather than as a compliance obligation, and to incorporate its content with other means of improving operative and governance arrangements.

Additionally, audit policies need to be designed so they reflect the risk characteristics of individual sectors. High-risk industries such as finance, energy, and real estate need to be held to higher audit standards, while low-risk industries can follow simplified standards. By focusing on risk, the risk-based approach can lead to the more effective allocation of audit resources and relieve firms in stable or low-risk circumstances of unwarranted burdens.

Finally, encouraging the application of state-of-the-art technologies in the course of an audit is crucial to improving efficiency and quality of audit. Technologies like artificial intelligence, big data analytics, and blockchain can be deployed to better identify anomalies, minimize fraud risk, and enhance the accuracy of audits. The need to train auditors on appropriate methods and managing their access to technology will be critical during this transition. It future-proofs not just the audit profession but also synchronizes Vietnam's audit with the global digital transformation trend.

In summary, the adoption of these policy recommendations will lead to a more transparent, disaster-resilient, and cost-effective audit environment in Vietnam. Enhancing supervision of audits, increasing demand for rotation, raising the governance responsibility of auditors, establishing industry-related standards, and accepting digital innovation are combined to contribute to the credibility of financial statements and the sustainable development of the capital market.

7. CONCLUSION

This study examines the modulating effect of the pre-COVID-19 period, as well as the COVID-19 period, on the performance of listed Vietnamese non-financial companies through the framework of audit quality. It explores the link between Big 4 auditors and auditor rotation using a mathematical measure and conducts robustness tests for firm size, age, debt ratio, and industry to control for other influencing factors.

The results show that Big 4 audited companies are more profitable both in terms of ROA and ROE, and this is confirmed by the average coefficient under fixed and random effects for the performance variables. This highlights the importance of high-quality audits in improving financial transparency and safeguarding the interests of investors. Yet, during the COVID-19 period, the impact of Big 4 audits was less significant, possibly due to macro-level disruptions such as supply chain failures and reduced consumer demand.

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The regression results do not support auditors' rotation and firms' performance at a statistically significant level. This calls into question the 'operational benefits' of short auditor tenures and whether frequent auditor changes will harm industry audit quality by stagnating familiarity and learning. In addition to providing some practical policy implications, that is, maintaining the balance of auditor independence and stability, enhancing the audit regulatory system, and paying attention to the issue of audit quality, the study is not without its limitations. Potential limitations may arise from secondary financial data quality and completeness, and an omitted variable bias from finding factors not observed on firm performance that are capable of explaining the underestimate captured in the model. These constraints provide research recommendations for the development and enhancement of this preliminary evidence.

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