

Impact of Audit Quality and Auditor Changes on Market Reactions: A Panel Estimation within the Context of Bangladesh

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Abstract

The objective of this study is to examine the impact of audit quality and auditor changes on market reactions. Using random effects and the GMM model for robustness, the study used 63 manufacturing companies listed on the Dhaka Stock Exchange (DSE) from 2014 to 2022. Market reaction has been measured through market capitalization, while audit quality is evaluated using a dummy variable for Big 4 firms and absolute discretionary accruals calculated via the Modified Jones Model. Auditor changes are measured by the audit firm and partner tenure and rotation. The study reveals that audit quality significantly enhances market reactions. Conversely, auditor changes do not significantly affect market reactions, suggesting investors believe independence remains intact regardless of auditor changes. The findings highlight a limited engagement of companies with Big 4 auditors, potentially due to high fees. The results have been discussed through the lens of agency theory. Higher audit quality may reduce information asymmetry between shareholders and managers, mitigating the agency problem. The results indicate that Big 4 auditors can guarantee superior audit quality. The relationship of auditor changes and market reactions is found to be conflicting and debatable in the literature. Also, there is a dearth of research on the impact of audit quality and auditor changes on market reactions in an emerging economy like Bangladesh. This study may contribute valuable insights by examining key issues and recommending that policymakers foster competition in the audit market by supporting non-Big 4 firms to enhance audit quality. Additionally, it encourages future research into the reasons behind companies' reluctance to engage Big 4 auditors using varied methodologies.

Key Words: Audit quality, Auditor change, Absolute discretionary accruals, Information asymmetry, Agency problem

1. Introduction

The quality of audit and the changes of auditors are important factors in financial reporting that greatly influence market dynamics and investor

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perceptions. Tepalagul and Lin (2015) mention that audit quality pertains to the probability that the auditor identifies a violation and subsequently reports it. Audit quality is crucial in ensuring that the financial records produced by a company are accurate, so as to protect the interests of the stakeholders. The quality of an audit is essential in ensuring the precision and dependability of financial reporting (Clinch et al., 2012).

The quality of audit significantly influences market returns as investors heavily rely on audited financial statements, particularly the audit opinion, to make investment decisions. A positive reaction is expected from investors when an auditor provides an unqualified opinion, while a negative opinion would lead to a negative reaction. Audit quality is often measured by factors such as the auditor's expertise, reputation, independence, and resources. Big4 auditors are generally perceived as more expert and superior due to their global recognition and expertise. The Big4 designation is a commonly utilized metric for assessing audit quality (Harris & Williams, 2020; Martani et al., 2021; Bagonza et al., 2024). Another commonly used measure of audit quality is the presence of discretionary accruals (Martani et al., 2021; Bagonza et al., 2024). The auditor determines the presence of earning manipulation by calculating the absolute discretionary accruals. Earnings manipulation involves the deliberate manipulation of financial data by management, which can compromise the accuracy and reliability of financial statements, potentially leading to misinterpretations of a company's performance (Healy & Wahlen, 1999). The existence of more discretionary accruals indicates the presence of earning manipulation that lowers the quality of earnings. Low earning quality indicates a low-quality audit.

Another important phenomenon is auditor change. Auditor change can be due to the end of contracted tenure, or it may be for another reason, for example, due to disagreement with management or poor governance mechanisms, to ensure independence, to improve audit quality, among others (DeAngelo, 1981; Krishnan & Krishnan, 1997; Francis & Krishnan, 1999; Geiger & Raghunandan, 2002; Klein, 2002; Davidson et al., 2004 and Mattar et al., 2024).

The topic of audit market and auditor change has attracted considerable attention from scholars, professionals, and regulators for a number of years, particularly in the aftermath of the dissolution of Arthur Andersen (Mattar et al., 2024). Auditor switches are often motivated by the desire

for cost savings or improved services (Davidson et al., 2004; Mattar et al., 2024). According to Bangladesh Securities and Exchange Commission (BSEC) rules, no audit firm of chartered accountants shall be appointed as statutory auditor for a consecutive period exceeding three years (BSEC). Mandatory audit firm rotation is required after three years. The rotation of an auditor is important for many reasons. The primary objective is to improve the independence and objectivity of auditors by reducing the risks associated with long auditor tenure, which can lead to familiarity hazards (DeAngelo, 1981). Furthermore, it enhances quality control inside audit firms by enabling the exchange of knowledge and expertise among auditors, hence enhancing the overall quality of audit (DeFond & Jiambalvo, 1993). Additionally, the rotation of auditors is associated with enhancements in the quality of financial reporting, which may result in the adoption of more cautious financial reporting methods and a decrease in the probability of financial misconducts (Francis & Krishnan, 1999; Geiger & Raghunandan, 2002). Furthermore, instances such as client dissatisfaction with the quality of audit or disputes regarding accounting methods can also serve as reasons for auditor rotation (Klein, 2002; Krishnan & Krishnan, 1997). However, these changes may have an impact on the investor's reactions. The responses of investors, as indicated by stock market returns, may be observed to be either negative (Eichenseher et al. 1989; Johnson and Lys, 1990; Fried and Schiff, 1981; and Smith, 1988) or positively insignificant (Nichols and Smith, 1983). Companies audited by the four largest accounting firms (known as the Big 4) tend to demonstrate greater levels of financial reporting conservatism. This conservatism helps to reduce the likelihood of engaging in aggressive accounting procedures and manipulating earnings (Francis & Krishnan, 1999; DeFond & Jiambalvo, 1993). Hence, earnings management proxied by absolute discretionary accruals can be a good measure for assessing audit quality drop. This study is driven by the contradictory findings concerning the impact of audit quality and auditor changes on market reactions, aiming to validate the current literature within the context of Bangladeshi firms. Among the other factors, the information asymmetry between shareholders and managers is supposed to contribute to high agency costs in Bangladeshi companies. High-quality audit helps reduce informational asymmetry and agency problems. Both the expertise of the audit firms and their periodic rotation to enhance independence can improve audit quality and ultimately reduce the agency problem.

Therefore, agency theory is used to explain the findings of the study in the context of the Bangladeshi manufacturing sector.

The impact of auditor changes and audit quality on market return is a debatable topic in the literature that encourages further research in this area. Prior research has investigated the effect of auditor changes on abnormal returns, producing incongruous findings. For example, research conducted by Chang et al. (2010) and Dunn et al. (1999) indicated that auditor change adversely impacts abnormal returns. Nichols and Smith (1983) found no substantial correlation between auditor changes and abnormal returns. Such conflicting results have motivated further study on the impact of auditor change on market reaction. However, those studies have primarily focused on the developed economy. This study considers auditor change along with audit quality to determine market reactions in the context of Bangladesh, a region that has been overlooked in this research field.

Furthermore, this study includes manufacturing firms from nine (9) major sectors - pharmaceuticals & chemical, textile, food & allied, cement, ceramic, paper & printing, fuel & power, tannery, and miscellaneous-listed on DSE, with a total of 63 selected firms and a cumulative firm-years of 567. This research provides a broader coverage compared to previous studies as it takes into account samples from nine different sectors.

The study has the potential to make a valuable contribution to the current literature by addressing the inconsistencies and gaps in research regarding the effects of audit quality and changes in auditors on market reactions. Prior research conducted by Fried and Schiff (1981), Nichols and Smith (1983) and Chang et al. (2010) has shown inconsistent or conflicting findings, leading to a discussion over the connection between auditor changes and market reaction. The discovered research gap highlights the necessity for a thorough examination that takes into account not only the change in auditors but also the effect of audit quality. The incorporation of companies from many sectors listed on the DSE strengthens the external validity of the study, providing a more comprehensive scope in comparison to previous research. The main purpose is to take part in the debate regarding the impact of auditor change on market reaction. The study will add value to the existing literature about the impact of auditor change and audit quality on market reactions. The study will make policy recommendations to enhance audit quality, boost investor confidence,

promote financial transparency through high-quality audit, and increase market competition in both the stock market and the audit industry.

High quality audit can boost investor confidence. That will ultimately be expressed in stock market return as investors will be encouraged to invest. Such behaviour of investors will help to improve capital flow in the stock market. But relationship between audit quality and market return is not studied in the context of emerging economy like Bangladesh. Also, the relationship between auditor changes and market return is a debatable topic and literature shows conflicting findings (Nichols & Smith 1983; Fried & Schiff 1981; Martani et al. 2021). This study is an extension of this debate. Hence, the core objective of this study is to investigate the impact of audit quality and auditor change on market reaction. The specific research question is:

Q₁: Is there any significant relationship between audit quality and auditor changes with market reactions?

2. Literature Review

2.1 Audit quality and market reactions

Bagonza et al. (2024) studied 472 publicly listed firms on the Johannesburg stock exchange from 2014 to 2019, finding that improved audit quality positively affects market response, as indicated by share prices and average market returns. High-quality audit enhances confidence in financial statements, influencing market reactions favorably.

Audit quality indicators, influenced by auditors' skills, experience, and timely reporting, are crucial for assessing audit quality (Pinello et al., 2019). Big4 accounting firms are considered as industry leaders, providing a higher quality audit than non-Big4 firms (Francis, 2004; Geiger & Rama, 2006; and Che et al., 2019).

There is a significant relation between audit quality and auditor independence (Tepalagul & Lin, 2015). A deficiency in auditor independence diminishes audit quality. Auditor independence is determined by the audit tenure, Big4 status, rotation, expertise, etc. A long tenure of an audit firm may create a familiarity threat that can lower the audit quality. The ultimate impact will be on the stock market. A lower quality audit can't detect misappropriations. So, investors will be cheated until and unless a high-quality auditor is appointed and shows the true scenario of the company. And then the market shows a substantial negative reaction.

Hence, the hypothesis can be developed as follows:

H₁: There is a significant relation between audit quality and market reaction.

2.2 Market reactions due to auditor changes

Fried & Schiff (1981) conducted a study to determine market reaction in the case of auditor changes during the period 1972-75. However, their results were inconclusive, in part due to insufficient sample sizes. They found no significant market reactions to any kind of auditor changes.

In their study, Nichols and Smith (1983) examined the market response to auditor changes to validate the argument put forth by Fried and Schiff (1981). However, their study does not provide evidence to support the overall F-S (Fried and Schiff) argument, as they did not find an overwhelming and significant reaction. Regarding the DeAngelo (1981) hypothesis, the market's response to auditor changes was aligned with the anticipated outcome of their model. The market seemed to generally respond favorably to a transition from a non-Big Eight auditor to a Big Eight auditor, and vice versa. Nevertheless, the extent of the disparities in the response did not reach statistical significance. Therefore, the N-S result did not offer substantial evidence to support their argument about product differentiation in the audit market.

Bills et al. (2024) found that the turnover of a chief audit executive is adversely correlated with market reactions that reduce the quality of financial reporting and increase external audit fees.

Martani et al. (2021) investigate the impact of audit tenure and audit rotation on audit quality, specifically focusing on the differences between Big4 and non-Big4 audit firms. The study was done in Indonesia. The findings indicate that audit firm rotation has a positive effect on audit quality, with a lower impact observed in Big4 firms. In non-Big4 firms, audit partner rotation does not significantly affect audit quality, but audit firm rotation can improve it. In contrast, Big 4 firms can enhance audit quality through audit partner rotation due to their sufficient number of partners for quality review. Enhanced audit quality will ultimately affect the market reaction due to high-quality audit.

Babul (2015) conducted a study to assess how changes in auditors affect market reactions, focusing on the impact of auditor changes on company stock returns. The research analyzed three key variables: the timing of

auditor changes, company size, and auditor resignations. This event study spanned from 1999 to 2013, covering periods before and after the Sarbanes-Oxley Act of 2002, which significantly altered audit regulations. With 690 observations, the findings revealed that announcing an auditor change generally leads to negative stock returns, with auditor resignations intensifying these adverse effects, especially in the short term.

Klock (1994) conducted a study to investigate the stock market reaction due to a change in the chartered accountant using standard event time methodology. The study analyzed the cumulative abnormal return of 50 sample firms that provided information about auditor change, over the period from July 1, 1986, to July 1, 1987. The study revealed a noteworthy adverse market response to auditor switches, suggesting that the investing public views these transfers as strategic actions taken by management to exploit opportunities. Existing literature indicates that studies examining the market response to changes in auditors have produced inconclusive results. Johnson and Lys (1990) did not observe any unusual financial gains for companies that switched auditors. However, Eichenseher et al. (1989) and Albrecht (1990) discovered substantial negative returns as a result of changing auditors. Several studies have discovered a notable adverse response to auditor switches, as these switches indicate that the company was trying to exert influence over the auditor (Fried & Schiff, 1981).

Hence, the second hypothesis can be developed as follows:

H₂: There is a significant relation between auditor changes and market reactions.

2.3 The measure of audit quality

Discretionary accruals are commonly used as a measure of audit quality because they reflect the level of influence the auditor has on the reporting choices made by management. Becker et al. (1998) found that Big 4 clients exhibit lower levels of absolute discretionary accruals in comparison to non-Big 4 clients. Francis et al. (1999) found that Big 4 auditors effectively reduce the prevalence of opportunistic and aggressive reporting by their customers. This is supported by the observation that their clients exhibit higher overall accruals while having lower discretionary accruals. Adhikary et al. (2021) conducted a study to find out whether the listed manufacturing firms in Bangladesh engaged in earnings management to avoid reporting losses. The authors found that listed manufacturing firms with small positive earnings per share (EPS)

engaged in accrual-based earnings management (AEM) to avoid reporting losses. Also, they found that managers craft discretionary expenses to manage real earnings. So, determining the presence of discretionary accruals is a good measure of earning management with which audit quality is related. Because a high-quality audit can reduce the tendency of earning management by using discretionary accruals. Hence, determining the discretionary accruals as a proxy for audit quality is particularly useful in the context of Bangladesh. One of the important objectives of this study is to investigate the relationship between audit quality and market reactions, which is overlooked in the literature, especially there is a dearth of research on this topic in Bangladesh. However, various models, including the Jones model (1991), Kasznik (1999), Kothari model (2005), Healy Model (1985), DeAngelo Model (1986), Industry Model (1991), and Modified Jones Model (1995), are utilized to determine the absolute discretionary accruals to detect earnings management. Dechow et al. (1995) present empirical support for the efficacy of the Modified Jones Model in detecting instances of earnings manipulation. The Modified Jones Model is regarded as superior due to its ability to offer the most robust assessments of earnings management in comparison to other alternative models. The Modified Jones Model demonstrates its superiority in detecting earnings management across several scenarios. Furthermore, Chan et al. (2008) stress the transparency of the Modified Jones Model, specifically noting its explicit method for identifying abnormal accruals, which enhances its credibility among stakeholders.

3. Theoretical Framework

Agency Theory

Agency theory outlines the relationship between the shareholders and the managers, emphasizing the potential conflicts of interest that arise due to the conflicting goals between these two parties (Jensen & Meckling, 1976). As there is a divergence of interests between shareholders and management, mechanisms such as audit are designed to align these interests. High-quality audit will help to reduce the agency costs of the companies. When the auditors are highly qualified with independence, professional skepticism, and reputation, they will apply rigorous audit procedures that will easily detect earning manipulation by aggressive accounting practices like recording more discretionary accruals. So, the high-quality audit will reduce information asymmetry between the management and the market

participants. Ultimately, agency costs due to earnings manipulation will be reduced. Though hiring a high-quality auditor also results in extra agency costs, the benefits of hiring a high-quality auditor will outweigh the costs. The theory also suggests that a decline in audit quality may result in increased information asymmetry between shareholders and management. Lower audit quality leads to managing earnings opportunistically to serve the interest of the managers at the cost of the shareholders. Such behavior impacts financial reporting and ultimately harms the shareholders' interests. However, the market reaction to the perceived decline in audit quality may reflect concerns about the effectiveness of the monitoring mechanism including mandatory audit firms and partners' rotation, and avoidance of long audit tenure in the same client, among others. Changing the auditor may be seen as an adjustment to mitigate agency problems or a tendency to manipulate earnings.

4. Method

4.1 Sample

The study focuses on manufacturing companies listed on the Dhaka Stock Exchange (DSE), chosen for their diverse sectors and significant involvement in auditor changes and audit quality. It includes a sample of 63 firms from nine sectors: pharmaceuticals & chemical, textile, food & allied, cement, ceramic, paper & printing, fuel & power, tannery, and miscellaneous. Data spans from 2014 to 2022, utilizing annual reports available on LankaBangla's website. Initially, 80 firms were considered, but 17 were excluded due to missing data across the nine firm years, resulting in a final sample of 63 firms and a total of 567 firm-years for analysis.

4.2 Model specification

The estimated equation for the sample

$$\hat{m}_{cap_{it}} = \hat{\beta}_0 + \hat{\beta}_1 abs_dac_{it} + \hat{\beta}_2 d_big4_{it} + \hat{\beta}_3 af_ten_{it} + \hat{\beta}_4 ap_ten_{it} + \hat{\beta}_5 af_rot_{it} + \hat{\beta}_6 ap_rot_{it} + \hat{\beta}_7 size_{it} + \hat{\beta}_8 d_loss_{it} + \varepsilon_{it}$$

4.3 Operationalization of variables and rationale for inclusion

4.3.1 Dependent variable

Market reaction has been measured by market capitalization (M_CAP), the dependent variable of the model where market capitalization is calculated as market price per share times the number of shares outstanding.

4.3.2 Independent variables

4.3.2.1 ABS_DAC

Absolute discretionary accruals (ABS_DAC), which is a proxy measure of earning management and audit quality. Myers et al. (2003) and Chi et al. (2009) used the absolute discretionary accruals to measure the audit quality. It is predicted that higher absolute discretionary accruals are due to the decline in audit quality. There are several models of measuring discretionary accruals such as Jones Model (1991), Kasznik Model (1999), Kothari Model (2005), Healy Model (1985), DeAngelo Model (1986), Industry Model (1991), and the Modified Jones Model (1995). The Modified Jones Model is considered a superior model in detecting earnings management, improving upon earlier models by adjusting for discretion on revenue recognition. It distinguishes between discretionary and non-discretionary accruals, unlike the Healy (1985) and DeAngelo (1986) models, which rely on aggregate accruals. The modified version of the Jones model improves the Jones Model (1991) by adjusting for changes in receivables, which improves it at detecting earnings manipulation through credit sales. The other models, like the Industry Model (1991), fail to capture firm-specific earnings manipulation because they focus on industry averages rather than individual firm behaviors. While useful for studying disclosure incentives, the Kasznik Model (1999) does not directly estimate discretionary accruals as effectively as the Modified Jones Model. Lastly, the Kothari Model (2005) is more complex to apply and does not necessarily outperform the Modified Jones Model in detecting earnings management. And this model is also relevant within the context of emerging economies like Bangladesh, as Adhikary et al. (2021) find it to be relevant in detecting accrual-based earning management in Bangladesh. However, the Modified Jones Model to determine absolute discretionary accruals, proposed by Dechow et al. (1995), is as follows:

$$\left(\frac{TACC_{it}}{TA_{i,t-1}}\right) = \alpha_1 \left(\frac{1}{TA_{i,t-1}}\right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{i,t-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{TA_{i,t-1}}\right) + \varepsilon_{it}$$

Where;

$TACC_{it}$ = total accruals of company i in period t

$TA_{i,t-1}$ = total assets of company i in year t-1

$\Delta REV_{i,t}$ = change in firm i's income between years t and t-1

$\Delta REC_{i,t}$ = change in receivables of company i between years t and t-1

$PPE_{i,t}$ = gross fixed assets of company i in year t

ε_{it} = Discretionary Accruals

$\alpha_1, \alpha_2, \alpha_3$ are the parameters of the model.

4.3.2.2 D_Big4

D_Big4=Dummy variable, measures the audit quality.1 if audited by the Big4 firm and 0 if the company is not audited by Big4.

Auditor Change has been measured by the end of audit firm and partner tenure, rotation of audit firm, and partner. All these four variables are dummy variables.

4.3.2.3 AF_TEN

AF_TEN =Dummy variable, auditor changes measured by audit firm tenure; 1 if audit tenure ends and 0 if audit tenure is running.

4.3.2.4 AP_TEN

AP_TEN =Dummy, auditor changes measured by audit partner tenure; 1 if audit partner tenure ends and 0 if audit partner tenure is running.

4.3.2.5 AF_ROT

AF_ROT = Dummy, 1 if the company rotates its audit firm and 0 if the company does not rotate its audit firm;

4.3.2.6 AP_ROT

AP_ROT = Dummy, 1 if there is a rotation in the signing audit partner and 0 if there is no rotation in the signing audit partner;

4.3.3 Control variables

SIZE=the company's size, quantified by the natural logarithm of the total asset, Martani (2021). It is projected that the SIZE of business will either have a positive or negative impact on ABS_DAC.

D_LOSS = Dummy, If the company records losses, it receives 1; otherwise, 0. The occurrence of losses is expected to be indicative of earnings management that positively influences ABS_DAC as companies tend to engage in earnings management to mitigate losses, Kallapur et al. (2010).

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Table 1: Summary of the Variables with Sources

Nature of the variables	Variables	Symbols	Short description with sources
Independent Variables	Audit Quality	D_BIG4	If audited by Big4, then 1; otherwise 0
		ABS_DAC	(DeAngelo, 1981; Dopuch & Simunic, 1980; Nichols & Smith, 1983; Teoh, 1992). Absolute discretionary accruals (Martani et al., 2021; Myers et al., 2003; Chi et al., 2009).
	Auditor Changes	AF_TEN	The year when audit firm tenure ends will get 1; otherwise, 0 (Dummy).
		AP_TEN	The year when the audit partner tenure ends will get 1; otherwise, 0 (Dummy).
		AF_ROT	The year when a new firm is engaged will get 1; otherwise, 0 (Dummy).
		AP_ROT	The year when a new partner is engaged will get 1; otherwise, 0 (Dummy).
Dependent Variable (Market Reaction)	Market Capitalization	M_CAP	Market price per share times the number of shares outstanding.
Control Variables	Company Size	SIZE	Natural logarithm of total asset (Nawangsari & Iswajuni, 2019; Martani et al., 2021).
	Loss	D_Loss	Dummy; if booked loss 1, otherwise, 0.

4.4 Data type & sources

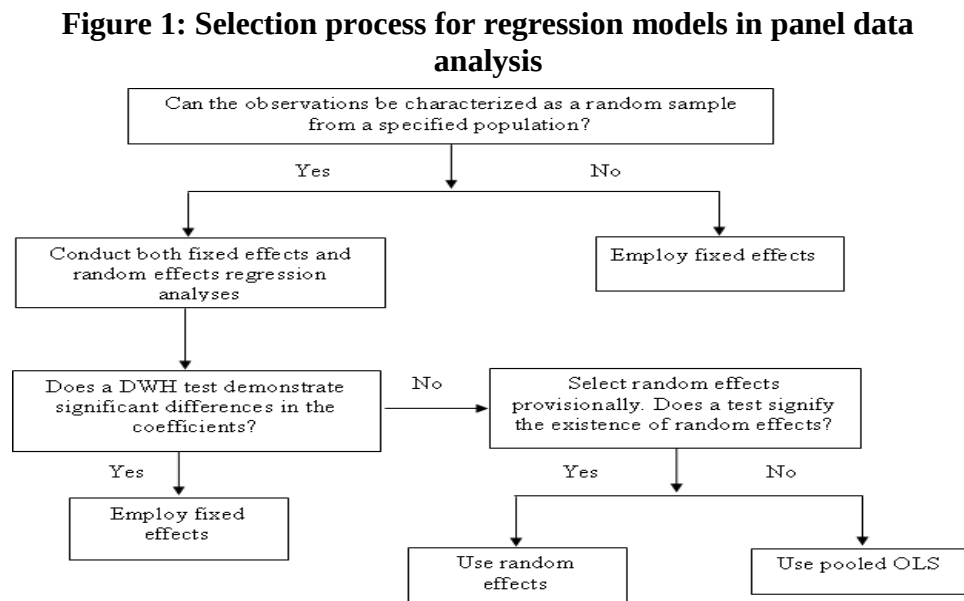
The study utilizes panel data. The justification for employing panel data lies in its ability to enhance estimation accuracy and statistical power by combining cross-sectional and time-series dimensions, controlling for unobserved heterogeneity, and enabling dynamic analysis of factors. Secondary data is used in this study, gathered from multiple sources, such as annual reports, audited financial statements, and the DSE website.

4.5 Data analysis tools and techniques

Various types of panel data models exist, including fixed effect models, random effect models, between estimators, within estimators, dummy variable estimators, first differencing estimators, Feasible Generalized Least Square (FGLS), Ordinary Least Square (OLS), Monte Carlo methods, among others, (Wooldridge, 2012). A random effects model has been employed in this study based on its suitability. Also, GMM has been conducted as the most robust estimation technique to estimate the impact of audit quality and auditor changes on market reaction.

4.6 Selection process for regression models in panel data analysis

(Between Pooled OLS Model, Random-Effects Model, and Fixed-Effects Model)



Source: Dougherty (2011, p.421)

4.7 Rationale for employing Generalized Method of Moments (GMM)

Panel data sets often contain numerous observations, and Arellano & Bond (1991) proposed a GMM (generalized method of moments) estimation technique ideal for such data. GMM is particularly efficient in the presence of heteroscedasticity or serial correlation, outperforming fixed or random effect estimators (Arellano & Bond, 1991).

This study employs random effect regression and GMM in analyzing the panel data. The use of random effects regression allows for the inclusion of both time-invariant and time-varying firm characteristics. The model assumes that individual-specific effects are uncorrelated with explanatory variables. But if this assumption does not hold, results may suffer from the omitted variable bias, leading to endogeneity concern (Baltagi, 2021). However, to address the potential endogeneity problem, serial auto correlation and the heteroscedasticity problem, GMM is employed as it uses lagged variables as instruments which improves estimation consistency (Arellano & Bond, 1991).

5. Results and Discussion

5.1 Descriptive statistics

Table 2 depicts the descriptive statistics of the variables under the study. D_Big4 is a measure of audit quality that has a mean value of 3.7%. This suggests that only 4% of all sample firms undergo audits by Big4 firms, a situation that is highly disappointing. This trend could be attributed to the higher audit fees charged by these firms or the perception held by companies that engaging Big4 firms may limit their ability to exercise discretion and judgment, thus viewing them as a deterrent to engaging in earnings manipulation. Future research can explore the reasons behind firms' lack of motivation to engage with Big4 firms.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
M_Cap	567	1.506e+10	3.425e+10	32264018	3.432e+11
D_BIG4	567	.037	.189	0	1
AF_TEN	567	.349	.477	0	1
AP_TEN	567	.429	.495	0	1
AF_ROT	567	.339	.474	0	1

AP_ROT	567	.406	.491	0	1
ABS_DAC	567	.061	.09	0	.933
SIZE	567	22.282	1.3	17.71	25.303
D_LOSS	567	.108	.31	0	1

The mean value of ABS_DAC is 0.61, which indicates that discretionary accruals constitute approximately 6% of total assets in the sample, which is insignificant. That means companies are not practicing earnings management. M_Cap is a measure of market response, the independent variable of this study. The mean value of audit firm and partner tenure is 0.349 and 0.429, which indicates that on average, audit firms and partners have a tenure of approximately 34.9% and 42.9%, respectively. The mean value of audit firm and partner rotation indicates that, on average, 33.9% and 40.6% of the companies experienced firm and partner rotation, respectively. The mean value of D_Loss is 0.108, which indicates 10.8% of the sample companies' booked losses in the study years.

5.2 Wooldridge test for autocorrelation in panel data

Table 3: Wooldridge test for Autocorrelation

Dependent variables	F (1, 62)	Prob>F
M_Cap	10.894	0.0016

The p-value, being less than 0.05 (the significance level), indicates the presence of serial autocorrelation.

5.3 Breusch-Pagan test for heteroscedasticity

Table 4: Breusch-Pagan test for Heteroscedasticity

Chi2 (1)	790.18
Prob > chi2	0.0000

The p-value being less than 0.05 (the significance level) indicates the presence of heteroscedasticity.

5.4 Multicollinearity test

Table 5: Variance Inflation Factor

	VIF	1/VIF
AF_ROT	4.009	.249
AP_ROT	3.761	.266
AF_TEN	3.085	.324
AP_TEN	3.016	.332
ABS_DAC	1.083	.923
SIZE	1.082	.924
D_LOSS	1.076	.929
D_BIG4	1.034	.967
Mean VIF	2.268	.

As demonstrated in Table 5, a test of multicollinearity is conducted for increased reliability. Here, the variance inflation factor (VIF) is utilized to examine the multicollinearity issue. This test determines whether or not explanatory variables are substantially associated with one another. The multicollinearity issue is not considered problematic up to a certain point. A VIF below 10 indicates the absence of multicollinearity between the explanatory variables. According to Table 5, the average VIF is just 2.268, and the VIF for all variables is less than 10. In addition, the tolerance factor 1/VIF is smaller than 1. Therefore, this test indicates that the regression model in this study has no multicollinearity concerns.

5.5 Matrix of correlation

Here, the extent to which two variables are connected linearly is determined by analyzing the correlation matrix. When there is a strong connection between explanatory variables, multicollinearity problems arise. The existence of multicollinearity issues reduces the model's validity.

Table 6: Pair-wise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) M_Cap	1.000								
(2) D_Big4	0.167 (0.000)	1.000							
(3) AF_TEN	-0.030 (0.481)	-0.026 (0.535)	1.000						
(4) AP_TEN	-0.032 (0.449)	-0.019 (0.654)	0.808 (0.000)	1.000					
(5) AF_ROT	-0.015 (0.727)	-0.002 (0.958)	-0.337 (0.000)	-0.273 (0.000)	1.000				
(6) AP_ROT	-0.013 (0.766)	0.009 (0.828)	-0.228 (0.000)	-0.142 (0.001)	0.851 (0.000)	1.000			
(7) ABS_DAC	-0.029 (0.484)	0.116 (0.006)	0.018 (0.665)	0.065 (0.122)	0.010 (0.819)	0.011 (0.802)	1.000		
(8) D_LOSS	-0.099 (0.019)	-0.068 (0.105)	-0.039 (0.349)	0.044 (0.292)	0.028 (0.503)	0.015 (0.729)	0.161 (0.000)	1.000	
(9) SIZE	0.444 (0.000)	0.091 (0.031)	-0.052 (0.214)	-0.042 (0.323)	-0.044 (0.293)	-0.023 (0.592)	-0.187 (0.000)	-0.178 (0.000)	1.000

The correlation matrix indicates a significant positive relation between D_Big4 and M_Cap. Investors perceive an audit conducted by one of the Big4 firms as indicative of a superior-quality audit report, resulting in a favorable response. A negative correlation is observed, albeit not significant, between the end of audit partner tenure and audit partner rotation, a measure of auditor change, and M_Cap. This implies that whenever an audit partner changes, the market responds negatively, potentially indicating a decline in audit quality. They perceive that there may be potential disagreement between the audit partner and auditor, poor governance mechanisms, or financial irregularities that coerced the partner to resign or leave. This phenomenon may occur when an auditor transitions from the Big4 to the non-Big4. Whenever companies report losses, the market typically reacts negatively, which is a common occurrence. But at times, the recording of losses can be an indication of earnings manipulation. Perhaps they are applying big-bath techniques to manage future earnings. Although there is a relationship between the other variables, either positively or negatively, it is not significant. The

relationship between D_Loss and ABS_DAC is positive. Because when a company recognizes losses, there is a tendency to manipulate earnings and hide the losses. The matrix shows a negative correlation between firm size and discretionary accruals. A possible explanation is that larger organizations have an incentive to improve transparency in their financial reporting and minimize the practice of manipulating earnings.

5.6 Test of hypothesis through random effect regression

Both fixed effects and random effects analyses have been performed as the samples are selected randomly. Subsequently, the suitable model is chosen based on the outcome of the (Hausman, 1978) specification test.

5.6.1 Fixed effect regression

Table 7: Results from Fixed Effect Regression

M_Cap	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ABS_DAC	2.699e+09	1.209e+10	0.22	.823	-2.106e+10	2.645e+10	
D_BIG4	1.350e+10	5.402e+09	2.50	.013	2.892e+09	2.412e+10	**
AF_TEN	1.765e+09	3.043e+09	0.58	.562	-4.214e+09	7.745e+09	
AP_TEN	-3.186e+09	2.928e+09	-1.09	.277	-8.939e+09	2.567e+09	
AF_ROT	-3.179e+08	3.555e+09	-0.09	.929	-7.302e+09	6.666e+09	
AP_ROT	8.486e+08	3.416e+09	0.25	.804	-5.863e+09	7.560e+09	
SIZE	1.055e+10	2.471e+09	4.27	0	5.695e+09	1.541e+10	***
D_LOSS	-2.467e+09	3.044e+09	-0.81	.418	-8.448e+09	3.514e+09	
Constant	-2.199e+11	5.500e+10	-4.00	0	-3.280e+11	-1.119e+11	***
Mean dependent var	15057203169.100		SD dependent var	34252540173.687			
R-squared	0.049		Number of obs	567			
F-test	3.189		Prob > F	0.000			
Akaike crit. (AIC)	28375.759		Bayesian crit. (BIC)	28414.823			

*** $p < .01$, ** $p < .05$, * $p < .1$

5.6.2 Random effect regression

Table 8: Results from Random Effect Regression

M_Cap	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ABS_DACC	4.315e+09	1.178e+10	0.37	.714	-1.877e+10	2.740e+10	
D_BIG4	1.440e+10	5.276e+09	2.73	.006	4.057e+09	2.474e+10	***
AF_TEN	1.733e+09	3.023e+09	0.57	.566	-4.192e+09	7.659e+09	
AP_TEN	-3.112e+09	2.903e+09	-1.07	.284	-8.802e+09	2.577e+09	
AF_ROT	-1.292e+08	3.519e+09	-0.04	.971	-7.027e+09	6.768e+09	
AP_ROT	6.114e+08	3.361e+09	0.18	.856	-5.976e+09	7.199e+09	
SIZE	1.105e+10	1.779e+09	6.21	0	7.559e+09	1.453e+10	***
D_LOSS	-2.552e+09	2.985e+09	-0.85	.393	-8.402e+09	3.299e+09	
Constant	-2.311e+11	3.977e+10	-5.81	0	-3.090e+11	-1.531e+11	***
Mean dependent var		15057203169.100	SD dependent var		34252540173.687		
Overall r-squared		0.213	Number of obs		567		
Chi-square		47.788	Prob > chi2		0.000		
R-squared within		0.049	R-squared between		0.275		

*** $p < .01$, ** $p < .05$, * $p < .1$

5.6.3 Hausman (1978) specification test

The Durbin-Wu-Hausman (DWH) test is applied to choose the appropriate model between fixed effects and random effects. If the p-value exceeds 0.05 (significance level), the random effects model is suitable; conversely, if the p-value is below 0.05, the fixed effects model is appropriate.

Table 9: Results from the Hausman test

	Coef.
Chi-square test value	1.402
P-value	.994

Here, the p-value is above 0.05, indicating that the random effects model is suitable compared to the fixed effects model.

5.6.4 Breusch and Pagan Lagrange Multiplier (LM) test for random effects

The LM test assists in selecting between a random-effects regression and pooled OLS regression. A p-value greater than 0.05 indicates the absence

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of random effect. Hence, pooled OLS will be selected as appropriate. Conversely, a p-value lower than 0.05 indicates the presence of a significant random effect and a random effect model will be appropriate.

Table 10: Results from Breusch and Pagan LM test

	Var	sd= sqrt(Var)
M_Cap	1.17e+21	3.43e+10
E	3.52e+20	1.88e+10
U	6.25e+20	2.50e+10

Prob > chibar2 = 0.0000

Since the p-value is lower than 0.05, this indicates a significant random effect, hence the random effects model is appropriate.

5.6.5 Selected random effect regression

Table 11: Results from Selected Random Effect Regression

M_Cap	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ABS_DACC	4.315e+09	1.178e+10	0.37	.714	-1.877e+10	2.740e+10	
D_BIG4	1.440e+10	5.276e+09	2.73	.006	4.057e+09	2.474e+10	***
AF_TEN	1.733e+09	3.023e+09	0.57	.566	-4.192e+09	7.659e+09	
AP_TEN	-3.112e+09	2.903e+09	-1.07	.284	-8.802e+09	2.577e+09	
AF_ROT	-1.292e+08	3.519e+09	-0.04	.971	-7.027e+09	6.768e+09	
AP_ROT	6.114e+08	3.361e+09	0.18	.856	-5.976e+09	7.199e+09	
SIZE	1.105e+10	1.779e+09	6.21	0	7.559e+09	1.453e+10	***
D_LOSS	-2.552e+09	2.985e+09	-0.85	.393	-8.402e+09	3.299e+09	
Constant	-2.311e+11	3.977e+10	-5.81	0	-3.090e+11	-1.531e+11	***
Mean dependent var	15057203169.100		SD dependent var	34252540173.687			
Overall r-squared	0.213		Number of obs	567			
Chi-square	47.788		Prob > chi2	0.000			
R-squared within	0.049		R-squared between	0.275			

*** $p < .01$, ** $p < .05$, * $p < .1$

However, there is a problem of autocorrelation and heteroscedasticity. That's why GMM will be a more efficient method of estimation.

5.7 Generalized Method of Moments (GMM)

Table 12: Results from GMM Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.44E+11	2.33E+10	-10.45584	0.0000
ABS_DAC	1.63E+10	1.49E+10	1.097381	0.2729
D_BIG4	2.19E+10	6.91E+09	3.175729	0.0016
AF_TEN	1.20E+09	4.73E+09	0.253127	0.8003
AP_TEN	-1.61E+09	4.50E+09	-0.357262	0.7210
AF_ROT	1.90E+09	5.43E+09	0.350092	0.7264
AP_ROT	-1.80E+09	5.07E+09	-0.354591	0.7230
SIZE	1.16E+10	1.03E+09	11.25112	0.0000
D_LOSS	-2.01E+09	4.29E+09	-0.467229	0.6405
R-squared	0.215883	Mean dependent var	1.51E+10	
Adjusted R-squared	0.204641	S.D. dependent var	3.43E+10	
S.E. of regression	3.05E+10	Sum squared resid	5.21E+23	
Durbin-Watson stat	0.198842	J-statistic	558.0000	
Instrument rank	10	Prob(J-statistic)	0.000000	

5.8 Discussion of the findings

5.8.1 Audit quality and market reaction

This study assesses audit quality using D_Big4 and ABS_DAC, while market response is evaluated by market capitalization. Here in the GMM table, it is noticed that the coefficient of D_Big4 is positive and very high. That indicates there is a positive relationship between market capitalization and D_Big4 firms. And the relationship is very significant as p-value is 0.0016, lower than the significance level of 0.05. This suggests that whenever companies are audited by the Big 4 audit firms, investors perceive that they will provide high-quality audit service and would detect any misappropriation or misstatement. As a result, the

investors react positively, which results in higher market returns (i.e., M_Cap etc). This finding is similar to the findings of Dopuch and Simunic (1980) and Martani (2021). Therefore, this study has proven its first hypothesis, which is that audit quality and market response are significantly correlated. The positive reaction observed when companies are audited by Big4 accounting firms may arise from multiple reasons. Firstly, the global recognition of Big4, reputation, expertise, and substantial resources contribute to this positive reaction. Their involvement in auditing activities adds credibility and assurance to financial statements, thereby fostering confidence among investors, stakeholders, and the broader market. Secondly, the adherence of Big4 firms to rigorous audit standards and practices is perceived to improve the quality and dependability of financial reporting. Their thorough oversight and examination help in minimizing the chances of significant errors or fraudulent behaviors going unnoticed. Thirdly, being associated with a Big4 auditor signifies a company's dedication to transparency, governance, and adherence to regulatory mandates. This association can positively impact perceptions of the company's leadership, integrity, and long-term sustainability, ultimately leading to positive returns.

Also, the study undertook another measure of audit quality, which is absolute discretionary accruals (ABS_DAC). This study finds no statistically significant relationship between absolute discretionary accruals and market reaction. One potential explanation is that investors prioritize the reputation and brand value of audit firms as indicators of audit quality, rather than absolute discretionary accruals, which may be more challenging to assess and comprehend directly. Investors may not see accruals as a robust indicator of audit quality, potentially due to the divergent interpretations of accrual adjustments by different companies.

5.8.2 Auditor changes and market reactions

Auditor change has been measured by four dummy variables: audit firm tenure, audit partner tenure, audit firm rotation, and audit partner rotation. The study finds a positive relationship between audit firms' tenure and audit firms' rotation with market capitalization. However, the relationship is not significant for the manufacturing sector of Bangladesh. That indicates whether the auditor changes or not, the market remains indifferent. A possible explanation is that the market may not perceive auditor changes as having a substantial impact on the company's financial

health or future outlook. This finding is similar to the finding of Nichols and Smith (1983). Despite the absence of rotation, both the audit partner and the audit firm uphold their independence, ensuring that the quality of the audit remains intact. This can be inferred from the current findings, though the relationship is statistically insignificant and inconclusive. However, this finding is similar to the findings of Martani (2021). Another finding provided by GMM is that in the case of partner change, the market response coefficient shows negative values for audit partner tenure end and audit partner rotation, indicating a negative relationship between audit partner tenure end and rotation. Though the findings are statistically insignificant and inconclusive, a possible explanation for such a trend is that investors often view changes in audit partners, especially frequent rotations or sudden terminations of previous partners, as indicators of underlying problems within the company. These issues may include poor financial performance, governance issues, potential accounting irregularities, or conflicts between the partner and the management. Beyond the statistical result-based explanation, the indifference of investors due to auditor changes can be explained from the regulatory or cultural perspective also. As there is a rule of mandatory audit firm rotation in every three years, investors may perceive auditor changes as a result of that rule. To ensure the independence and objectivity of the auditors, the Bangladesh Securities and Exchange Commission (BSEC) introduced the rule of mandatory audit firm rotation in every three years. They may perceive auditor changes as routine events rather than signals of audit quality variations. So investors may perceive that though auditor changes, audit quality will remain intact. However, the statistical insignificance between auditor changes and market reactions may be studied further to understand their connection as provided by Table 12. New variables can be taken, new methodology can be adopted to study this connection in the manufacturing sector.

6. Conclusions with Policy Implications

The study investigates the impact of audit quality and auditor changes on market reactions between the years 2014-2022. The samples were the manufacturing companies listed in DSE. This study is a panel estimation that uses random effect regression and GMM to estimate the impact of audit quality and auditor changes on market reactions. Where audit quality is measured by D_Big4 and absolute discretionary accruals, auditor change has been measured by four dummy variables: audit firm tenure,

audit partner tenure, audit firm rotation and audit partner rotation. However, the study fulfills the objectives to some extent. The first hypothesis is proved and supported by the previous literature. The initial hypothesis posits a significant correlation between audit quality and market response. The market response measured by *M_Cap* has shown a positive and significant relationship with *D_Big4*. This implies that whenever companies are audited by the Big4, the market reacts positively. The positive reaction observed when companies are audited by Big4 accounting firms may arise from multiple reasons. Firstly, the global recognition of Big4 (i.e., KPMG, PwC, EY, and Deloitte) for their reputation, expertise, and substantial resources contributes to this positive reaction. Their involvement in auditing activities adds credibility and assurance to financial statements, thereby fostering confidence among investors, stakeholders, and the broader market. Secondly, the adherence of Big4 firms to rigorous audit standards and practices is perceived to improve the quality and dependability of financial reporting. Their thorough oversight and examination help in minimizing the chances of significant errors or fraudulent behaviors going unnoticed. Thirdly, being associated with a Big4 auditor signifies a company's dedication to transparency, governance, and adherence to regulatory mandates. This association can positively impact perceptions of the company's leadership, integrity, and long-term sustainability, ultimately leading to positive returns. During data collection, it was noted that a limited number of companies undergo auditing conducted by major accounting firms known as the Big4. This trend could be attributed to the high audit fees charged by these firms or the perception held by companies that engaging Big4 firms may limit their ability to exercise discretion and judgment, thus viewing them as a deterrent to engaging in earnings manipulation. Such observation creates a scope to study this topic, which leads to companies not engaging the Big4 accounting firms. Based on the observations and findings, some policy recommendations can be made. For example, policymakers may consider implementing strategies to lower audit expenses for companies engaging with Big 4 firms while maintaining audit quality. This could include offering incentives or subsidies to alleviate the financial strain of hiring Big4 auditors, especially for smaller or mid-sized companies. Furthermore, policymakers, such as BSEC and ICAB, could potentially enhance competition within the audit market by supporting smaller auditing firms to bolster their capabilities and

reputation. BSEC and ICAB can provide capacity-building training to the small and mid-sized audit firms so that they can compete with the Big 4 audit firms. This support may enable these firms to compete more effectively with the dominant Big 4 firms, offering companies a broader selection of audit options. Such capacity-building training programs will also enhance audit quality. The Institute of Chartered Accountants of India (ICAI) started capacity-building programs to strengthen the capacity of small and medium-sized audit firms (*About – CMP Benefits*, n.d.). Also, Bangladesh Govt. may provide subsidy or incentive to the companies to encourage them to employ Big 4 firms as high pricing can be a good reason for reluctance of companies in appointing Big 4 firms. Such govt. subsidy or incentive can be a viable solution to enhance audit quality. By implementing policies aimed at reducing obstacles to engaging with Big4 firms, companies may be incentivized to increase their engagement with these firms, potentially leading to enhanced audit quality, transparency, and investor trust in financial reporting. Such policies will increase competitiveness in the audit industry that will help to improve audit quality. From the viewpoint of agency theory, it can be concluded that high audit quality will reduce information asymmetry between the management and the owners (Makhlouf et al., 2021 & Idiris, 2024). Ultimately, firms will experience a positive market return in the future.

However, this study shows an insignificant statistical relationship between auditor change and market reaction. GMM shows there is a positive relation between M_Cap and audit firm tenure and audit firm rotation. However, the relationship is statistically insignificant. That means according to these findings, the market remains indifferent to whether auditors change or not. The market may not consider auditor changes to significantly impact the company's financial well-being or prospects, or they don't think that auditor changes may help improve audit quality that may be impacted by familiarity threats arising from long audit tenure. Despite the absence of rotation, both the audit partner and the audit firm uphold their independence, ensuring that the quality of the audit remains intact. This can be inferred from the current findings, though the relationship is not statistically significant and conclusive. Existing literature indicates that studies examining the market response to changes in auditors have produced inconclusive results. However, this finding is similar to the findings of Martani et al. (2021) and Johnson & Lys (1990). They did not observe any unusual financial gains for companies that

switched auditors. Another interesting finding provided by GMM is that in case of partner change, the market response coefficient shows negative values for audit partner tenure end and audit partner indicating a negative relationship between audit partner tenure end and rotation. Though the findings are not statistically significant and conclusive, a possible explanation for such a trend is that investors often view changes in audit partners, especially frequent rotations or sudden terminations of previous partners, as indicators of underlying problems within the company. These issues may include poor financial performance, governance issues, potential accounting irregularities, or conflicts between the partner and the management. However, the insignificant relationship between auditor changes and market reaction may be explained from the regulatory perspective beyond the statistical result based explanation. As there is a rule of mandatory audit firm rotation, investors perceived audit firm changes as a routine task. And the purpose of making such a rule is to ensure the independence and objectivity of the auditor, so the market doesn't react when audit firms change. However, mandatory audit firm rotation remains a viable solution for enhancing audit quality, as such a policy will enhance the auditor independence and objectivity. China, India, Indonesia, Pakistan, Singapore, Thailand have already adopted such mandatory rotation policy (Siregar et al., 2012). As Bangladesh has also adopted such a policy like others, proper implementation of this policy is expected to enhance audit quality. However, future research can be suggested to justify such a result by using a different method and methodology. The findings of this study are limited to only manufacturing sectors. Future studies can be conducted on the heterogeneous sectors to generalize the findings.

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