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Does Corporate Governance Influence Auditor Choice in an Emerging Economy? An Empirical Evidence

Sadia Afrose[1*], Mehedi Hasan[1], Tasneem Nova [2], & Saimoon Hasan[1]

[1]Department of Business Administration, University of Asia Pacific, Dhaka, Bangladesh
[2]Department of Business Administration, North South University, Dhaka, Bangladesh
**Corresponding author: sadiamafrose@gmail.com*

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Research Article

Abstract

Purpose: *This study examines how corporate governance mechanisms influence the selection of Big4 auditors, with a particular focus on the moderating role of ownership structure. Specifically, it compares family and non-family firms to determine whether governance characteristics affect auditor choice differently across these two types of firms.*

Method: *Using panel data from 109 manufacturing firms listed on the Dhaka Stock Exchange between 2013 and 2019 (681 firm-year observations), the study employs logistic regression analysis to investigate the determinants of Big4 auditor selection.*

Result: *The findings reveal that board size is positively associated with the likelihood of engaging a Big4 auditor. In contrast, the frequency of board meetings shows a consistent negative association across both family and non-family firms. Sub-sample analyses reveal that in non-family firms, board size, audit committee size, and audit committee meeting frequency are positively associated with the choice of a Big 4 auditor. In contrast, for family firms, board gender diversity has a positive effect, whereas audit committee size and meeting frequency are negatively associated with the likelihood of selecting a Big 4 auditor.*

Implications: *These results suggest that ownership structure significantly moderates the relationship between governance variables and auditor choice. The study provides novel evidence from an emerging economy, offering insights for policymakers, regulators, and corporate stakeholders aiming to enhance audit quality and corporate transparency through tailored governance reforms.*

Keywords: Audit committee, Big4, corporate governance, confidence gap theory, family firms

1. Introduction

The Big 4 auditors refer to the four largest international accounting firms: Deloitte, PwC, EY, and KPMG, known for their global reach and high standards of audit quality. These firms are widely recognized for their global presence, extensive client base, and rigorous auditing standards. Accounting serves to represent the economic reality of a corporation, while financial reporting falls under the responsibility of the firm's managers. The information provided through financial reporting must cater to the diverse needs of its users. Consequently, it can be a challenging task for managers to prepare financial statements that satisfy the requirements of every interested party. Many users rely on financial statements to make informed economic decisions (Tsai & Chiou, 2009); therefore, the accuracy of these financial statements is of critical importance to investors. When reported financial statements fail to meet the specific needs of interested

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users, their value diminishes. This raises concerns about managers using financial statements opportunistically to meet the needs of interested users. In addition, as managers' incentives depend on the performance under their supervision, where positive firm performance brings rewards for them and negative firm performance results in a negative valuation of their supervision, the study by Yahya and Ghazali (2017) notes the use of discretion by Management for their benefits. Thus, managers tend to show positive earnings from either normal business operations or earnings manipulation by avoiding losses. Here also, the issue of managers' opportunistic behavior arises. Most of the existing literature (Dechow et al., 1996; Roychowdhury, 2006; Bhuiyan, 2015; Adhikary et al., 2021) finds the practice of earnings manipulation both in developed and developing countries.

Due to the practices of earnings management, the quality of financial reporting is reduced. Thus, the quality of financial reporting remains a major concern in the corporate world as earnings management is a continuous process, and there is no clear evidence of how this opportunistic behavior by Management can be curbed. Thus, regulatory authorities consistently pay significant attention to maintaining the integrity of financial records in corporations by reducing such manipulations by Management. Moreover, failure to ensure such quality due to accounting scandals often leads to corporate failures (e.g., WorldCom and Enron). The influence of corporate governance in maintaining the quality of financial reporting has been greatly emphasized in the wake of such scandals and the 2008 financial crisis (Wilbanks et al., 2017).

The core responsibility of governance mechanisms is to monitor the financial reporting process, ensuring that Management is ethical in its reporting of the financial statements and reducing the degree of information asymmetry (Al-Okaily & Naueihed, 2020). Several studies (Abbadi et al., 2016; Alhadab & Nguyen, 2018; Al Azeez et al., 2019) have been conducted on the factors of corporate governance that restrict the magnitude of earnings management to ensure the integrity of financial reporting. Ismail et al. (2015) find that hiring Big 4 auditors to audit financial statements reduces earnings management. According to their study, a firm's transition from a Big 4 auditor to a non-Big 4 auditor, such as switching to a smaller and possibly less rigorous audit firm, increases its susceptibility to earnings management, which can potentially impact audit quality and stakeholder perceptions. Based on their results, they argue for hiring Big4 auditors as a check against earnings manipulation.

However, hiring practices from Big4 vary from country to country due to different institutional settings and market conditions (Meah & Hossain, 2023). Besides, not all corporate governance factors can be equally important in welcoming Big4 in every country. Moreover, the type of firm, i.e., family-controlled and non-family-controlled firms, is another important factor that influences the hiring of the Big 4 in a particular country (Meah & Hossain, 2023). That is why this study aims to explore the impact of corporate governance factors on audit quality (as practiced by the Big 4) and investigate whether this impact differs between family and non-family firms.

There are several reasons for conducting this study in the Bangladesh context. First, the hiring rate of Big4 auditors who provide quality auditing services is very low, at only 17% in Bangladesh (Rahman et al., 2019). Moreover, hiring Big 4 auditors is voluntary, although all registered companies are required to have their financial statements audited by an independent chartered accountant in Bangladesh. Therefore, determining the factors behind the voluntary requirement that promotes the choice of any of the Big 4 auditing firms to audit financial statements justifies this initiative in Bangladesh.

Second, some studies have taken the initiative to identify the determinants that ensure the presence of quality auditors in Bangladesh. A few studies (Hossain & Sobhan, 2019; Siddiqui et al., 2013; Karim & Moizer, 1996) worked on identifying the determinants of audit fees as a proxy of quality audit as higher efforts in quality auditing result in higher audit fees by mixed constituents, e.g., client size, client complexity, client risk, client profitability, government ownership, independent director, audit committee size, audit report log in terms of days, and some other firm-specific mechanisms. Haque et al., (2019) used

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a composite estimate of corporate governance with the help of four mainsprings: board size, board independence, presence of remuneration and audit committee, and audit committee independence as a determinant of quality auditing. Khan et al., (2011) used different types of ownership concentration, e.g., institutional investors, foreign investors, sponsor investors, and individual investors, as determinants of quality auditing. Those studies do not take into account the main governance mechanisms, particularly board composition. The reason behind this study is to explore the impact of a wide range of governance mechanisms, e.g., board size, board independence, board meetings, board gender diversity, audit committee size, and audit committee meetings on quality auditing, as previous studies lag regarding the incorporation of such governance surrogates as determinants of quality auditing in Bangladesh.

Third, Bangladesh's capital market is characterized by highly concentrated ownership (Siddiqui, 2010), which is particularly pronounced in family-run firms, which account for nearly half of the manufacturing sector. The bargaining power of auditors gets reduced when they provide audit services to family-dominated clients (Chen et al., 2007). The hiring of quality auditors will, therefore, be different in family and non-family firms, notably lower in family firms than in non-family firms. This is one of the key reasons behind this study, which aims to identify the catalysts for selecting Big 4 as auditors for family and non-family firms in Bangladesh.

The rest of the manuscript is arranged as follows. Section 2 presents the theoretical background, and Section 3 outlines the existing literature on corporate governance and the Big 4, as well as formulates the hypotheses. Section 4 describes the methodology, including data collection, variable definition, and the statistical tools applied. Section 5 highlights the findings of this study and some discussions on the findings. Finally, in section 6, the paper concludes with some recommendations and limitations based on the findings of this study.

2. Theoretical Framework

According to Agency Theory (Jensen & Meckling, 2019), a conflict of interest exists between principals (shareholders) and agents (managers) due to the separation of ownership and control, resulting in agency costs. The role of corporate governance is highly emphasized to reduce such costs and ensure the wealth and interests of the principals. This principal-agent theory aims to find a way to enhance the chance of aligning the interests of shareholders and managers, thereby maximizing the overall well-being of the firm and minimizing costs. Thus, the board will influence the selection of quality auditors, such as Big 4 audit firms, to control the opportunistic approaches of Management and ensure the overall integrity of financial reporting, leading to the protection of shareholders' stakes. The role of the corporate board in mitigating information gaps and agency costs by enhancing corporate governance is also demonstrated in the studies of Ali and Meah (2021) and Cotter and Silvester (2003).

The optimal utilization of a firm's available resources also reflects the tendency to influence the auditor's choice within a firm, aligning with the theme of Resource Dependence Theory. The link with the external environment, facilitated by skilled and experienced resources such as the board of directors, also plays a crucial role in ensuring better corporate governance (Muttakin et al., 2012). To maintain goodwill, a firm will look for quality audit firms that manage resources effectively, such as through partnerships, alliances, and contracts.

In reverse, women are overlooked in the corporate world due to their maternal instincts and the cultural and institutional barriers of society. Moreover, they lack confidence in themselves due to their low presence among male colleagues, which is particularly serious when there is only one female director and several male directors on the corporate board, hindering her ability to communicate smoothly with her male colleagues and freely express her accomplishments to others. Confidence is a belief in someone's capacity to move forward and succeed, a standpoint that triggers action, and confidence is interrelated with action. When a female employee suffers from low confidence, the natural result is inaction, as she cannot fully utilize her knowledge and qualifications in the workplace due to the hesitancy that arises from low

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confidence despite possessing good qualifications. This supports the idea of the Confidence Gap Theory (Kay & Shipman, 2014). This theory suggests that gender diversity on a corporate board may not play a significant monitoring role in ensuring better corporate governance than it is expected to. The impact of this theory is prevalent not only in developed countries but also in developing countries (Baker, 2006)

3. Literature Review and Hypothesis Development

Four significant components of the corporate board, namely corporate board size, percentage of independent directors on the corporate board, percentage of female directors on the corporate board, and the number of meetings held by the corporate board in a particular, fiscal year, are used to test the impact of corporate board composition on quality auditing.

3.1. Corporate board size and quality auditing

Corporate board size is a significant factor in corporate governance that helps bring best practices to a firm. As mentioned, management involvement in earnings manipulation due to a lack of external quality auditing can be minimized by a larger board size, which can play a significant role in reducing management discretion in managing reported earnings by hiring external quality auditors. The efficiency of the board of directors as the best controlling mechanism to monitor the practices and actions of Management is argued (Fama & Jensen, 1983). There are two theories available to explain the role of larger board size in firms: one is agency theory, which enhances the integrated, controlling function of the board, and another is resource dependence theory, which fosters efficiency in resource utilization. These two theories employ different approaches to enhance corporate governance. Adopting techniques to reduce conflict between principals and agents falls under the purview of agency theory, where safeguarding company goodwill through resource management (such as relationships, business partnerships, alliances, and contracts) ensures the integrity of financial reporting, aligning with the perspective of resource dependence theory. Moreover, a larger board consists of skilled and experienced resources who are exposed to remove uncertainty by establishing communication with the external environment, resulting in better internal corporate governance practices (Muttakin et al., 2012; Saima, 2018). One of the best techniques to reduce financial manipulation and ensure the accuracy and fairness of financial statements, which will result in a good firm reputation, is to hire the best auditors. Thus, a larger board size will facilitate hiring Big 4 auditors to implement best practices in corporate governance within the company. The positive association between a larger board and Big4 is documented in the studies by Makni et al. (2012) and Karaibrahimoğlu (2013).
On the other hand, it is also argued that integration and communication among members on larger corporate boards become narrow, resulting in poor decision-making in terms of increasing firm value, ensuring reputation, and maintaining the integrity of financial statements (Meah & Chaudhory, 2019). Moreover, the free-riding problem among board members is a deterrent to the efficiency of larger boards (Ali & Meah, 2021; Adhikary & Mitra, 2016). Larger board sizes will, therefore, be ineffective in ensuring the existence of quality auditors in the firms where they belong. Based on the above argument, the following hypothesis is developed:
H1*: There is a significant positive relationship between corporate board size and quality auditing.*

3.2. Corporate board independence and quality auditing

An independent corporate board representing shareholders is another significant player in corporate governance mechanisms that can effectively curb managers' discretionary behaviors (Jensen & Meckling, 2019). It requires a larger number of outside directors, as opposed to inside directors, and corporate board members who are not directly or indirectly involved in any operational activities and do not have any operational responsibilities within the firm. Independent directors are effective observers of managers'

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activities, and the study by Wan Abdullah et al. (2008) found a positive association between corporate board independence and external audit quality. They identify three key factors behind this type of role for independent board members. The first factor addressed by them is the reputation of independent directors as experts in monitoring. Fama & Jensen, (1983) also present their argument that corporate board independence, characterized by having more non-executive independent directors, aims to enhance their reputational capital. Moreover, independent directors associated with corporate collapses or performance below standard tend to be punished by the market; thus, they drive themselves to control management's opportunistic behavior. The second factor is the form of legal liability, which implies the organizational legitimacy of the independent directors to the shareholders (Filatotchev et al., 2005). The failure to fulfill the effective monitoring role of independent directors is subject to rigorous sanctions that prompt them to ensure the better fulfillment of their monitoring responsibilities. The third factor is the absence of a conflict of interest between shareholders and independent directors, who are non-executive, compared to executive directors. Thus, non-executive directors are dedicated to ensuring the wealth of shareholders by requesting higher external auditing services in cases of financial reporting problems that result in significant losses for the shareholders (Carcello et al., 2002). The role of independent directors in ensuring trustworthy and complete financial reporting is also emphasized by Chen and Liu (2010).

Furthermore, a positive association between board independence and environmental disclosure has been found by Ofoegbu et al. (2018) in Nigeria. Moreover, the study by Klein (2002) also finds that independent directors are less inclined to engage in earnings management; however, this finding is not supported by Park and Shin (2004). One reason could be that the role of independent directors is limited to supervision rather than ensuring the quality of financial reporting by asking external quality auditors. Independent directors are paid only some meeting fees as remuneration, which cannot motivate them to play their significant roles. Instead, they are just observers in Bangladesh (Saima, 2018). Ahmed and Gábor (2012) also point out this behavior of independent directors in the Bangladeshi context. So, the following hypothesis is developed:

H2*: There is a significant positive relationship between corporate board independence and quality auditing.*

3.3. Gender diversity on the board and quality auditing

The benefits of gender diversity on corporate boards are also recognized by Harris et al. (2019) and Meah & Chaudhory (2019). To curb the discretionary practices of Management that manipulate earnings, the study by Krishnan and Parsons (2008) found a positive and significant role for female CEOs. Similarly, the aggressiveness of female CEOs compared to male CEOs towards discretionary accruals and real activities is less pronounced, as found by Na and Hong (2017). It implies that gender diversity is less likely to compromise the integrity of financial reporting through earnings management; thus, there is a high possibility that female directors will select quality auditors. In the study of (Elaigwu et al.), the positive association between female directors and Big4 audit firms is documented, and this result is supported by the female directors' concern for safeguarding their reputation and enhancing the quality of financial statements.

Saima, (2018) find that gender diversity has no monitoring role on firm performance where it is also found that female directors on corporate boards cannot restrict the practice of earnings management (Adhikary et al., 2021; O'Reilly & Main, 2012; Hili & Affes, 2012). There are several possible reasons for the underrepresentation of female directors as one of the key mechanisms of corporate governance. The confidence gap in their abilities is one possible cause that restricts women from playing significant roles in the corporate world. Moreover, female directors in Bangladesh are often appointed based on family ties, personal relations, and friendships rather than on quality and expertise (Muttakin et al., 2012). The role of female directors in hiring quality auditors will, therefore, be insignificant as they are hired to ensure family control, leading us to formulate the following hypothesis:

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***H3**: There is a significant positive relationship between gender diversity on the board and quality auditing.*

3.4. Frequency of board meetings and quality auditing

Previous studies have also documented the effectiveness of the frequency of board meetings in enhancing the corporate board's monitoring process (Anderson et al., 2004). The number of board meetings, as a value-added component to board monitoring functions, is expected to increase the presence of quality auditors in firms. A meeting of the board of directors is an opportunity to review Management's actions in detail and address essential issues of the firm, solving problems promptly (Ronen, 2008). Thus, the monitoring role of board meetings is expected to be enhanced by involving quality auditors within the organization. The positive association between the frequency of board meetings and external audit quality is documented in the studies by Chen et al. (2007) and Gana & Lajmi (2011). There is another perspective on the efficiency of board meetings, which is not entirely free of cost; thus, it includes resources such as time, transportation expenses, and meeting fees that are utilized when directors meet. These resources are valuable to the firms and are expected to be used by the directors to evaluate strategies and oversee Management. Consequently, there will be a negative outcome from the frequency of board meetings if the perceived benefits are oversimplified. Johl et al. (2015) argue that firm resources, such as time, energy, and money, are diverted to less productive activities due to frequent board meetings. The study by Shan (2014) notes the inactive role of board meetings in seeking a quality auditor. As the role of the frequency of board meetings on quality auditors is mixed in the empirical literature, this study proposes the following hypothesis:

***H4**: There is a significant positive relationship between the frequency of board meetings and quality auditing.*

3.5. Audit committee size and quality auditing

Parallel to the corporate board composition, an audit committee, a sub-committee of a corporate board, responsible for overseeing the financial reporting and auditing process, plays a significant role in ensuring the integrity and fairness of the financial statements by precluding the accountants and Management from fraudulent activities (Ali & Meah, 2021; Menon & Williams, 1994); thus, the addition of quality auditors could be promoted for such role by an effective audit committee in the firms. In this study, two critical parameters of audit committees —audit committee size and audit committee meetings —are examined to determine their impact on the quality of auditors.

An audit committee is a skilled section of human resources of a company where every member of that committee is from a strong academic background and expertise; audit committee members are, therefore, expected to ensure better corporate governance than a committee without such qualifications. Members of audit committees with accounting and financial knowledge are good at ensuring the quality of financial reporting (Choi et al., 2004; Baxter & Cotter, 2009). Moreover, the study by Abdul Rahman and Haneem Mohamed Ali (2006) highlights the effectiveness of audit committees in mitigating the degree of earnings management. It is, therefore, implied that members of the audit committee will welcome quality auditors whose job is to ensure the integrity of financial reporting. Conversely, Hossain and Sobhan (2019) find that audit committees have an insignificant role in determining audit fees in Bangladesh. In light of the above discussion, the following hypothesis is formulated:

***H5**: There is a significant positive relationship between audit committee size and quality auditing.*

3.6. Frequency of audit committee meetings and quality auditing

The frequency of audit committee meetings is a significant factor that can enhance the committee's efficiency (Anderson et al., 2004). Audit committee members can utilize their skills to address immediate problems and make informed decisions to resolve them if they frequently meet in a firm (Rahman & Ali,

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2006). The benefits of frequent audit committee meetings include reducing the information gap between executives and auditors, facilitating prompt decision-making, ensuring proper recording, and ensuring the quality of the reporting. The practical impact of audit committees in restricting the practice of earnings manipulation is evident in the study by Mohd Saleh et al. (2007), which argues that it is more likely to occur when audit committee members meet frequently. Thus, there will be a positive influence of meeting frequency by the audit committee on quality auditing as a check towards earnings management, leading us to develop the following hypothesis:

H6*: There is a significant positive relationship between the frequency of audit committee meetings and quality auditing.*

3.7. Governance Mechanisms and Quality Auditing between Family and Non-Family-Run Firms

Researchers examine the impact of corporate governance mainsprings between family and non-family firms and find out different levels of results such as increasing firm performance, increasing corporate reputation, expanding the degree of voluntary disclosures, and ensuring the presence of quality auditors, etc. Chen et al., (2007) note that the bargaining power of auditors gets reduced when they deal with clients having family control. Al-Okaily & Naueihed, (2020) note that the association of audit committee characteristics, e.g., audit committee size, audit committee expertise, and the frequency of audit committee meetings with firm performance, is significantly positive in non-family firms. In contrast, the same association is insignificant in family firms. This is because corporate governance mechanisms can reduce conflicts and information asymmetry between stakeholders and managers, resulting in improved output in non-family firms. However, they are ineffective in family firms due to the application and presence of unique monitoring and control tools developed by family firms themselves (Al-Okaily & Naueihed, 2020; Jaggi & Leung, 2007).

There could be several reasons behind the differential impact of governance elements on quality auditing between family and non-family firms. First, the consideration of family relationships over quality by family firms when hiring external auditors precludes governance mainsprings from requesting external quality auditors. Second, the consideration of financial gain resulting from lower auditing fees provided to the quality auditors corroborates the presence of less quality auditors in family firms. Third, the consideration of lower penalties and higher penalties is associated with non-compliance with guidelines that are subject to disclosure by quality auditors, resulting in lower external quality audits in family firms (Chen et al., 2007). They also report that family firms prefer less qualified auditors (i.e., non-Big 4 auditing firms) who are willing to issue unqualified audit opinions due to incentives provided by family firms, which attempt to conceal their non-compliance. It means that family firms consider other benefits, such as family identity, cost savings, and avoidance of punishment, rather than quality; consequently, they allow governance elements to have less influence on the choice of hiring Big 4 auditors compared to non-family firms. The above argument provides insight into the fact that the role of governance factors differs between family and non-family firms; consequently, their impact on quality auditing also varies between these two types of firms. Therefore, the proposed hypothesis is:

H7*: The impact of corporate governance on quality auditing will be significantly different between family and non-family firms.*

4. Methodology

4.1 Sample Selection

Secondary data extracted from the annual reports of the Dhaka Stock Exchange (DSE) listed 109 manufacturing firms is used as the primary source of information in this study. The sampling period spans from 2013 to 2019, and the final sample comprises 681 firm-years. Complete sample year observations could not be collected due to certain limitations, including the absence of annual reports on company websites, the omission of corporate governance-related variables in the annual reports, and firms adjusting their financial years to comply with guidelines. Those samples were kept out of the final sample

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consideration. Corporate governance guidelines were revised in Bangladesh in 2012, and the impact was reflected in the annual reports in 2013; thus, this study considers 2013 as the base year for sample collection. Out of 170 manufacturing firms listed on the DSE during our study period, we only considered those firms for which the complete set of data for at least three years was available, resulting in a sample of 109 firms. Table 1 illustrates the breakdown of the sample collection over 7 years from 2013 to 2019.

Table 1. Breakdown of sample selection

Description	Number of firm-year observations
Listed manufacturing firm-years on the DSE from 2013 to 2019 (109 firms* 7 years)	763
Less: Missing annual reports	(60)
Less: Missing corporate governance data	(22)
Final sample	681

4.2 Empirical model

This study employs a logistic regression model to examine the relationship between dependent and independent variables in the full sample and in sub-samples based on family and non-family firms.

$$Big4_{it} = \beta_0 + \beta_1 BDSIZE_{it} + \beta_2 BDIND_{it} + \beta_3 BDGEN_{it} + \beta_4 BDMEET_{it} + \beta_5 ACSIZE_{it} + \beta_6 ACMEET_{it} + \beta_7 AGE_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \beta_{10} BCOMPLEX_{it} + Year + \varepsilon$$

Table 2. Definition and measurement of the variables

Variables	Abbreviation	Full Name	Measurement	Reference
Dependent variable	Big4	Quality auditing	The dichotomous variable scored 1 if the sample firm-year is audited by Big4 audit firm. Otherwise, the score is 0	Meah (2021) Rahman et al. (2019); Mustafa et al. (2018)
Independent variables – corporate board structure	BDSIZE	Corporate board size	Natural logarithm form of the total number of directors on the corporate board	Mustafa et al. (2018)
	BDIND	Percentage of independent directors on corporate board	Total number of independent directors divided by total number of directors on corporate board	Mustafa et al. (2018); Abdullah et al. (2008)
	BDGEN	Percentage of female directors on corporate board	Total number of female directors divided by total number of directors on corporate board	Mustafa et al. (2018)
	BDMEET	Board meetings	Total number of corporate board meetings	Mustafa et al. (2018)
Independent variables – audit committee structure	ACSIZE	Audit committee size	Natural logarithm form of the total number of directors on the audit committee	Mustafa et al. (2018)
	ACMEET	Audit committee meetings	Total number of meetings held by the audit committee	Mustafa et al. (2018)
Control variables – firm characteristics	AGE	Firm age	Natural logarithm form of firm age measured by current year minus incorporation year	Rahman et al. (2019)
	SIZE	Firm size	Natural logarithm form of firm total assets	Mustafa et al. (2018)
	LEV	Firm leverage	Total debts divided by total assets	Mustafa et al. (2018)
	BCOMPLEX	Business complexity	Total inventories plus total receivables and scaled by total assets	Abdullah et al. (2008)

Source: Authors' Compilation

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4.3 Identification of Family Firms and Non-Family Firms

According to Khan et al. (2015), there is no universal or common criterion for separating family firms from non-family firms. Prior studies used several measurements for this differentiation. La (La Porta et al., 1999) note that the 20% cut-off point is a good measure for identifying firms with family control, and this measurement has been used in many subsequent studies, including those by Cascino et al. (2010) and Setia-Atmaja et al. (2011). (Cascino et al., 2010) argue that any single measurement is not sufficient to identify the firms with family control correctly. That is why multiple measurements have been applied in our study. Consistent with Meah et al. (2021), this study separates family firms from non-family firms based on family duality, which is a dummy variable that is set equal to 1 if the chairman and CEO/MD of a firm are from the same family, otherwise, the score is zero and identifies family duality based on 4 criteria: (i) clear indication of the relationship between chairman and CEO/MD in the annual reports, (ii) a firm except MNCs run by female chairman, (iii) a firm having more than 50% board of directors including chairman and CEO/MD with same surnames, (iv) and collection of primary data about the existence of family duality in a firm if any doubt arises. This study also applies the aforementioned measurements to distinguish between family and non-family firms.

4.4 Applied Statistical Tools

The application of logistic regression is the primary tool to test the hypotheses of the study as the dependent variable; Big4 is a binary variable in nature (Wan Abdullah et al., 2008); & (Mustafa et al., 2018). First, the total sample year is regressed on logistic regression. Second, sub-sample analysis is employed. Under the sub-sample analysis, the effectiveness of corporate governance variables on external audit quality is first examined in family firms and then in non-family firms to assess whether the association between corporate governance variables and external audit quality differs between family and non-family firms. Third, additional analyses are conducted to assess the robustness of the results: a full sample analysis with interaction variables is performed, considering both firm and year dummies. Additionally, Tobit regression using an upper-value limit and Pooled OLS regression are run to check the consistency of the results further.

5. Empirical results

5.1 Descriptive Statistics

Table 3 shows the distribution summary for means, standard deviations, medians, 1st quartile, and 3rd quartile values for each variable used in this study. Big4, BDSIZE, BDMEET, ACSIZE, ACMEET, AGE, and SIZE are represented in their actual values, where BDIND, BDGEN, LEV, and BCOMPLEX are given in the percentage form.

Table 3. Summary of statistics for the full sample

Variable	Mean	SD	Q1	Median	Q3
Big4	0.1542	0.3614	0	0	0
BDSIZE	7.3245	2.1452	5	7	8
BDIND (%)	24.95	9.26	20.0	25.0	28.57
BDGEN (%)	16.19	15.22	0	14.29	28.57
BDMEET	8.66	5.42	5	8	10
ACSIZE	3.36	0.6248	3	3	4
ACMEET	3.48	1.85	1	4	4
AGE	16.80	11.57	6	16	27
SIZE (in million Taka)	10451.85	21347.53	1325	3420	8901
LEV (%)	37.34	22.14	22.05	33.51	50.34
BCOMPLEX (%)	34.92	19.55	20.82	33.55	44.81
Number of observations (N)	681				

Source: Developed by authors (Variables are defined in Table 2)

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The table shows that about 15 percent of the companies audited by Big4 auditing firms. An average corporate board consists of 7 members, comprising an average of 25 percent independent directors and 16 percent female directors. A corporate board meets on average 9 times, and an audit committee, which is comprised of approximately three members, meets approximately 3 times a year. The average firm age is 17 years, and the average firm size is 10451 million in Bangladeshi Taka. The average firm leverage is 37 percent, while firm complexity is approximately 35 percent.Table 4 presents the difference of means tests between family firms and non-family firms. The table presents that the sample comprises 45 percent family firms (309 observations) and 55 percent non-family firms (372 observations) out of 681 firm-years. Table 4 shows that non-family firms (0.2285) are more quality auditing-friendly than family firms (0.0647), and this difference is statistically significant at the 1 percent level. This variation could be explained as follows: family firms consider family relations and friendship instead of quality to hire external auditors; Big4 auditors are costly due to their quality services, goodwill, as well as monopoly condition in the market, and hence family-controlled firms, go for hiring less quality auditors; finally, family firms are afraid of legal punishment and losing family control due to their non-compliances which are highly probable to be disclosed by Big4 auditing firms. That is why the likelihood of quality auditors is very low in family firms compared to non-family firms. It is also revealed in Table 4 that all corporate board factors and audit committee variables differ significantly between family and non-family firms. There are also significant variations in firm characteristics (except business complexity) between family and non-family firms. In the wake of this, it can be expected that the impact of corporate governance variables on the dependent variable Big4 will differ between family and non-family firms.

Table 4. Difference of means tests

Variables	Mean		T-statistic
	FF	Non-FF	
Big4	0.0647	0.2285	6.04***
BDSIZE	6.98	7.61	3.81***
BDIND	26.30	23.83	-3.49***
BDGEN	21.81	11.52	-9.32***
BDMEET	9.21	8.20	-2.42***
ACSIZE	3.31	3.40	1.86*
ACMEET	3.65	3.35	-2.11**
AGE	17.66	16.09	-1.76*
SIZE	7134.81	13207	3.73***
LEV	38.89	36.04	-1.68*
BCOMPLEX	35.97	34.04	-1.28
N	309	372	

Source: Developed by authors (Variables are defined in Table 2)

Note: ***P<0.01 denotes significant at 1% level, **P<0.05 denotes significant at 5% level, *P<0.1 denotes significant at 10% level. FF = Family firms, and Non-FF = Non-family firms.

5.2 Correlation Matrix

Table 5 illustrates the correlation test of Pearson among independent variables used in this study. The results reported in the table display low coefficient correlations (below 0.5) among all of the continuous variables. This finding suggests that there is no multicollinearity problem among the independent variables, and therefore, the empirical results from applying logistic regression will not be biased by such a problem (Wan Abdullah et al., 2008).

2.

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Table 5. Pearson correlation matrix (full sample)

	Big4	BDSIZE	BDIND	BDGEN	BDMEET	ACSIZE	ACMEET	AGE	SIZE	LEV	BCOMPLEX
Big4	1										
BDSIZE	0.3342***	1									
BDIND	-0.1051***	-0.2262***	1								
BDGEN	-0.0370	-0.0398	0.0088	1							
BDMEET	-0.0976***	0.0207	0.0267	0.0515	1						
ACSIZE	0.0888	0.2733***	-0.0792**	-0.0071	-0.0354	1					
ACMEET	0.0116	0.1774***	0.0971***	-0.1093	0.0737**	0.1727***	1				
AGE	-0.0148	0.0422	-0.0604	0.0638*	-0.0844**	0.0475	0.1081***	1			
SIZE	0.3713***	0.3379***	-0.0961***	-0.1144***	0.2352***	0.0640*	0.1047***	0.0234	1		
LEV	0.0852**	-0.0309	0.0189	-0.0788**	-0.0209	-0.0831**	0.1380***	-0.2078***	-0.099***	1	
BCOMPLEX	0.0058	-0.2442***	0.0756**	-0.0139	-0.1368***	-0.0523	-0.0255	0.3232***	-0.118***	0.348***	1

Note: ***P<0.01 denotes significant at 1% level, **P<0.05 denotes significant at 5% level, *P<0.1 denotes significant at 10% level.

5.3 Analysis of Logistic Regression

Table 6 presents the estimation results for the sample of 681 firm-years. The table shows that only the corporate board size is significantly and positively related to Big 4 auditors, supporting our Hypothesis 1.

Table 6. Logistic regression analysis of corporate governance and quality auditing

Variables	Coefficients (Standard error)
Constant	-15.7540*** (1.9883)
BDSIZE	2.8032*** (0.6218)
BDIND	0.0116 (1.9048)
BDGEN	2.1179 (1.0219)
BDMEET	-0.1899*** (0.0363)
ACSIZE	0.9024 (0.7416)
ACMEET	0.0459 (0.0823)
AGE	-0.11161 (0.1428)
SIZE	0.9283*** (0.1251)
LEV	1.6444** (0.6631)
BCOMPLEX	1.6640** (0.6801)
FDUMMY	-1.3659*** (0.3321)
LR chi2	206.34***
Pseudo R^2	0.3524
N	681

Source: Developed by authors (Variables are defined in Table 2)

Note: ***P<0.01 denotes significant at 1% level, **P<0.05 denotes significant at 5% level, and *P<0.1 denotes significant at 10% level. The numbers in parentheses are reported standard errors, which are robust and autocorrelation-adjusted.

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This finding suggests that a firm is more likely to deal with a quality auditor if it has a larger corporate board. On the other hand, there is a significant negative relationship between the frequency of board meetings and the Big 4. A firm tends to hire less quality auditors if its corporate board meets frequently. The remaining corporate governance indicators (percentage of female directors, percentage of independent directors, audit committee size, and frequency of audit committee meetings) play a negligible role in hiring Big 4 auditing firms. That is why the hiring of Big 4 auditors is relatively low in Bangladesh, at 15.42 percent, as reported in Table 3. Moreover, the family firm's dummy variable (FDUMMY) is incorporated into the main model to examine the impact of family firms on Big 4 audit firms. Table 6 reports that there is a significant negative relationship between family firms (FDUMMY) and Big4 audit firms. There will be fewer determinants of Big4 audit firms in family firms than in non-family firms.

Table 7 reports the estimation results for the sub-samples. The results indicate that the role of corporate governance mainsprings differs between family and non-family firms in the Big 4, supporting Hypothesis 7 (Meah & Hossain, 2023). There is a significant positive relationship between corporate board size and the Big 4 in non-family firms, whereas this relationship is insignificant in family firms. It is also found that board gender diversity is significantly and positively associated with Big 4 in family firms, but this association is insignificant in non-family firms. There is no difference between family and non-family firms in terms of the association between the frequency of board meetings and Big4, which is negatively significant.

Table 7. Corporate governance and quality auditing in family and non-family firms

Variables	Family firms	Non-family firms
	Coefficients (Standard error)	Coefficients (Standard error)
Constant	-9.7446*** (4.3512)	-19.5769*** (2.6358)
BDSIZE	1.9014 (1.7448)	3.3526*** (0.7809)
BDIND	9.6878 (6.8182)	2.2852 (2.4669)
BDGEN	5.3676** (2.6507)	2.4937 (1.4370)
BDMEET	-0.4045*** (0.1400)	-0.1889*** (0.0443)
ACSIZE	-5.5385** (2.8347)	1.5833** (0.9034)
ACMEET	-0.3855** (0.2059)	0.0100** (0.1013)
AGE	0.1194 (0.3480)	0.0501 (0.1811)
SIZE	1.2289*** (0.2928)	1.1081*** (0.1681)
LEV	0.2590 (1.7541)	1.9913*** (0.8221)
BCOMPLEX	5.1843** (2.6975)	1.3555* (0.8356)
LR chi2	63.41***	159.08***
Pseudo R^2	0.4279	0.3978
N	309	372

Source: Developed by authors (Variables are defined in Table 2).

Note: ***P<0.01 denotes significant at 1% level, **P<0.05 denotes significant at 5% level, and *P<0.1 denotes significant at 10% level. The numbers in parentheses are reported standard errors, which are robust and autocorrelation-adjusted.

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5.4 Robustness Tests

To verify the consistency of the results, the following additional tests were conducted, and the results are reported in Table 8. First, a dummy variable (FDUMMY), which is family duality, is created and included in the logistic regression model to estimate and run a complete sample interaction analysis. The results, titled "Interaction effects" in Table 8, support the findings reported in Table 7, except for the board meeting (BDMEET) in family firms. Second, the interaction model, which is clustered at firm and year level, is also run. The result is similar to those reported in Table 7, except for BDMEET, which signifies the consistency of the results. Moreover, a family firm (FDUMMY) is unlikely to hire Big 4 auditors, as there is a significant negative relationship between the binary variable FDUMMY and the Big 4 in Bangladesh.

Table 8. Corporate governance and external audit quality in family and non-family firms

Variables	Interaction effects	Clustered by firm and year
	Coefficients (Standard error)	Coefficients (Standard error)
Constant	-17.2410*** (2.2829)	-19.2294*** (2.4466)
BDSIZE	3.0053*** (0.7454)	2.9692*** (0.7556)
BDIND	0.7004 (2.1737)	1.5891 (2.3716)
BDGEN	1.2541 (1.2458)	2.5819 (1.3905)
BDMEET	-0.1794*** (0.0389)	-0.2121*** (0.0418)
ACSIZE	1.6488** (0.8334)	1.4965* (0.8910)
ACMEET	0.0422*** (0.0835)	0.1053*** (0.0894)
BDSIZE*FDUMMY	-1.1985 (1.5435)	-1.5225 (1.6148)
BDIND*FDUMMY	-4.3109 (6.0178)	-4.8359 (6.2387)
BDGEN*FDUMMY	4.9616** (2.9497)	4.4276** (3.1977)
BDMEET*FDUMMY	-0.1586 (0.1146)	-0.1423 (0.1149)
ACSIZE*FDUMMY	-7.3442*** (2.7301)	-8.4044*** (2.9336)
ACMEET*FDUMMY	-6.8505*** (3.6146)	-7.6280*** (3.7807)
AGE	-0.1817 (0.1538)	-0.0210 (0.1627)
SIZE	0.9559*** (0.1285)	1.1751*** (0.1477)
LEV	1.4672** (0.6831)	1.6379** (0.7320)
BCOMPLEX	1.6345** (0.7291)	1.5831** (0.7215)
FDUMMY	-13.2575*** (4.5655)	-15.2875*** (4.7870)
LR chi2	233.99***	257.70***
Pseudo R^2	0.3825	0.4401
N	681	681

Source: Developed by authors (Variables are defined in Table 2).

Note: ***P<0.01 denotes significant at 1% level, **P<0.05 denotes significant at 5% level, *P<0.1 denotes significant at 10% level. The numbers in parentheses are reported standard errors, which are robust and autocorrelation-adjusted.

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Moreover, pooled OLS and Tobit regression analyses are run for all the research models. The un-tabulated results (available upon request) indicate that the qualitative characteristics of the main findings are not compromised, except for some variations in control variables.

5.5 Discussion

Previous studies have also reported similar results to those in this study. From the full sample analysis, it is found that a larger corporate board is more likely to welcome Big4 auditors to audit their annual reports, supporting the concepts of resource dependence and agency theories. This finding is also documented by (Makni et al., 2012) and (Karaibrahimoğlu, 2013). It is also found that there is a significant negative relationship between the frequency of board meetings and Big4, implying that boards of directors give less emphasis to the selection of Big4 when they meet frequently. The remaining corporate governance factors examined in this study are found to play a negligible role in influencing the choice of external quality auditors, resulting in a relatively low presence of Big 4 firms in Bangladeshi manufacturing, at around 15%. The insignificant role of female directors in influencing the selection of Big4 supports the concept of the confidence gap theory. Table 3 reports that, on average, one female director represents the corporate board. Their single representation on the board makes them feel shy and less confident. That is why female directors cannot play the significant roles they share with their male counterparts.

From the results of our sub-sample analysis, it is found that corporate governance variables get less scope to welcome Big4 auditors in family firms compared to non-family firms. A corporate board is effective in non-family firms but ineffective in family firms, implying that non-family firms are aware of their reputation and strive to ensure the integrity of financial reporting. In contrast, family firms often prioritize their family relationships and friendships when hiring auditors, which can result in the selection of less qualified auditors. The insignificant role of board independence on Big4 signals a monitoring role rather than ensuring the quality of financial statements, both in family and non-family firms. One reason for this insignificant role could be the lower amount of money provided as a fee to independent directors who are not willing to perform at their best.

Another important finding is the positive and significant role of female directors in family firms, as well as their insignificant role in non-family firms. This supports the existence of a confidence gap among female directors in non-family firms, but it is absent among them in family firms. This is because, on average, there is one female director on the corporate board in non-family firms (see Table 4); thus, their single existence among their male colleagues makes them appear shy, introverted, and consequently less confident, resulting in an insignificant role played by them. The inclusion of female directors on corporate boards in family firms is higher than those of non-family firms (see Table 4). Moreover, most family corporate boards include more than one female director, and many of these directors are family members, such as spouses, daughters, and sisters-in-law. Female directors in family firms are, therefore, less likely to be shy, introverted, and preserved in their conversation and interaction, as they are family members and not alone among their male counterparts on board. In the wake of that, they do not suffer from a confidence gap that prevents them from playing a significant role in influencing the choice of Big4 in family firms.

Firm resources are diverted to unproductive actions when the corporate board meets frequently, and board members may engage in non-value-adding conversations if they sit together frequently and for a long time duration. That is why their impact is significantly negative on the selection of Big 4 firms, both in family and non-family firms.

Audit characteristics (audit committee size and audit committee meetings) are significantly positive in non-family firms but significantly negative in family firms, which may deter Big4 auditors. This is because family firms often believe that an internal audit committee is sufficient to maintain the quality of their financial statements. Moreover, hiring Big4 auditors will result in higher costs. That is why family firms do

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not allow audit committees to influence the choice of Big 4 firms; instead, they increase their dependency on internal audit committees and their interactions with them.

6. Conclusion

The concept of Big4 is very significant for a country with a weak institutional and environmental setting, where the quality of financial reporting is hindered by several reasons, such as earnings management and estimation errors. Like other countries with weak corporate governance and legal institutions, Bangladesh faces an integrity crisis in financial statements due to the absence of quality auditing firms in most companies. Rahman et al. (2019) noted that only 17 percent, which is a very low percentage, of manufacturing firms in Bangladesh hire Big 4 auditing firms to audit their financial statements. That is why this study aims to explore the influence of mainsprings that ensure the presence of Big4 in Bangladeshi manufacturing firms.

Focusing on a sample of 681 firm years, this study documents that there is only one factor - corporate board size - that welcomes Big4 in their affiliated firms, among other factors such as board independence, board gender diversity, board meetings, audit committee size, and audit committee meetings. This finding supports the context of agency theory and resource dependence theory. Another important finding is the insignificant role of female directors on Big4, supporting the insight of the confidence gap theory. The study also documents the significant negative role of board meetings on Big4.

Further investigation of our sub-sample analysis reveals significant variations in the impact of governance tools on Big 4 firms between family and non-family firms. First, corporate board size significantly influences the choice of Big 4 in non-family firms, whereas this influence is insignificant in family firms. Second, female directors on corporate boards are significant in attracting Big 4 auditors in family firms but insignificant in non-family firms due to their lone standing on the board, which further widens the confidence gap. Third, family firms are not directed to hire quality auditors to audit their financial statements. Consequently, the demand for Big4 is very low, as the percentage of such demand is approximately 6%, and there is only one factor—board gender diversity—that significantly and positively influences this demand in family firms. Fourth, audit committee size and audit committee meetings significantly welcome the Big 4 auditors in non-family firms but significantly deter them in family firms. Finally, this study demonstrates that non-family firms, compared to family firms, create more opportunities for Big4 auditors in Bangladesh.

This study makes a significant contribution to the corporate governance and auditing literature in several ways. This study provides evidence in support of the lower level of Big4 auditing practices in Bangladeshi firms. It also provides insights into the variations in the monitoring role of governance mainsprings between family and non-family firms. Moreover, it enriches the corporate governance and auditing literature by adding confidence gap theory to explain the role of board gender diversity. This study can serve as a valuable resource for entities and institutions considering corporate governance reforms. It is also a valuable resource for academics and scholars to understand the impact of corporate governance on auditor choice, providing different theoretical explanations.

There are some recommendations from this study. First, institutions dealing with corporate governance must understand the loopholes in the existing governance framework and take action to address the lower level of Big4 auditing practices in Bangladesh. Second, policymakers should consider the family firms that are less friendly to quality auditors. There should be a clear guideline to ensure the integrity of financial reporting in family firms. Third, necessary steps should be taken to motivate female directors to play their role in the corporate world. Most corporate boards do not have female directors, and the firms that do employ female directors typically have only one female director, making the female directors feel isolated and outnumbered among their male colleagues. Therefore, the number of female directors on the corporate board should be increased, and there must be a clear rule regarding this issue. The accomplishments of female employees should be evaluated and praised appropriately to motivate and boost their confidence in

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the workplace. Moreover, female directors should speak out more and become better signal providers by making good communications with their male peers.

7. Limitations and Directions for Future Research

This study also has some limitations. First, this study does not include the independence of the audit committee as a governance proxy. Second, the findings of this study are limited to the context of manufacturing firms. Future research could expand the scope to other industries to gain a more holistic understanding. Future studies should also consider using panel data across multiple years to observe trends and better infer casualty.

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