The mediation effect of audit committee quality and internal audit function quality on the firm size–financial reporting quality nexus

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Abstract

Purpose – This study examines the effects of firm size on financial reporting quality (FRQ) through the mediating effects of audit committee (AC) quality and internal audit function (IAF) quality.

Design/methodology/approach – Based on data from a questionnaire survey and archival sources of non-financial companies listed on the Dhaka Stock Exchange (DSE), the authors perform both structural equational modeling and ordinary least squares (OLS) regression to test the developed hypotheses.

Findings – Results show that the firm size is positively related to IAF quality. Firm size, AC quality and IAF quality are significantly associated with abnormal accruals (FRQ). Moreover, the authors find a mediation effect of the IAF quality on the relationship between firm size and FRQ, while no mediation effect is observed for AC quality. Thus, the study advocates companies focus on AC quality and IAF quality to enhance FRQ as it has a significant impact on corporate disclosure and investor decisions.

Research limitations/implications – First, the study is restricted to the survey questions that cover particular areas of the AC and IAF. Second, the sample selection focuses on relatively big industries in terms of the number of firms and excludes small sectors.

Practical implications – The findings provide significant implications for professionals and policymakers in making regulatory reforms and revising existing policies to improve governance monitoring performance and FRQ.

Originality/value – To the best of the authors' knowledge, this is the first study to explore the mediation effect of AC quality and IAF quality on firm size–FRQ nexus in a developing country.

Keywords Audit committee quality, Internal audit function, Firm size, Reporting quality, Corporate governance

Paper type Research paper

1. Introduction

In the aftermath of corporate scandals and the recent financial statement distortions, the significance of internal monitoring mechanisms (e.g. audit committee [AC] and internal audit function [IAF]) has been increasing remarkably among the regulators to improve the quality of financial reporting. The AC and IAF have become vital components of the corporate governance (CG) mosaic (Gramling and Hermanson, 2009) and play a crucial role in monitoring the financial statement preparation to restrain fraudulent reporting (García *et al.*, 2012). Regarding the effectiveness of the AC and IAF, a greater financial size of firms has a substantial effect on the provision of adequate resources and support. Large firms generally tend to exhibit and emphasize stringent internal monitoring to accomplish organizational objectives and enhance financial reporting quality (FRQ) (Gebrayel *et al.*, 2018). The AC and IAF are the governance mechanisms that assist the management in multiple ways and contribute to enhancing FRQ. For instance, the IAF provides assurance services to the AC in

areas such as financial reporting integrity, fraud investigations, compliance, internal control and organizational governance (Gramling and Hermanson, 2009). Standard setters (AICPA, 2013) consider the IAF to be a valuable resource for the AC to find the required information for monitoring the senior management and fulfilling its oversight responsibilities. To ensure AC and IAF efficiency, both need sufficient financial support for adequate staffing and training (Alzeban and Sawan, 2013). Thus, firm size is an important issue and concerns the decision to allocate the necessary financial resources to ensuring better AC and IAF quality. Larger firms are likely to focus more on the AC (Klein, 2002), which results in high-quality financial reporting. As such, AC and IAF quality and operational performance mostly rely on the organizational financial size.

Earlier studies (e.g. Abbott *et al.*, 2016; Prawitt *et al.*, 2009) have revealed that the IAF effectiveness relies on the IAF quality determinants, such as competence and independence and work performance and which help to improve FRQ. Likewise, the AC quality characteristics (e.g. size, independence, frequency of meetings and financial literacy) have been found to be positively associated with higher FRQ (Abbott *et al.*, 2004; Alqaraleh and Nour, 2020). Despite the intuitive appeal of the firm size, AC quality and IAF quality positively affecting FRQ, the prior empirical evidence is not as strong as the intuition would suggest. For example, larger firms have greater monitoring needs and higher incentives to maintain AC effectiveness and FRQ (Klein, 2002; Raimo *et al.*, 2021). Carcello *et al.* (2005) revealed that larger firms have a larger budget for internal audits, which changes the IAF performance. Conversely, Prawitt *et al.* (2009) suggested that a lack of resourcing for the IAF results in poor IAF quality. This flow of research focused on the firm size effects on the AC quality and the IAF, while their relationship with FRQ remains unobserved. On the other hand, several studies have explored the relationship between AC and IAF quality; for example, Alzoubi (2019) addressed the effect of the existence of an AC and IAF on earnings management; and Gebrayel *et al.* (2018) studied the AC's and the IAF's influence on FRQ. Komal *et al.* (2022) recommend that other measurements of earnings quality, such as real earnings management should be considered when exploring the effectiveness of audit committee (AC). While from the firm-size and FRQ perspective, previous studies address the firm-size effects on AC effectiveness (Deli and Gillan, 2000; Klein, 2002) and the firm-size relationship with the IAF (Carcello *et al.*, 2005; Sarens and Abdolmohammadi, 2011). However, the firm-size association with FRQ with the mediation of AC quality and IAF quality were overlooked.

Much of the research related to the AC and IAF has been conducted in developed country settings, considering for example the AC quality characteristics associated with financial reporting among US firms (Klein, 2002). Goodwin and Seow (2002) explored the relationship between AC characteristics and financial statement error in the UK setting; other studies have examined the AC characteristics and IAF relationship with earnings management in the Spanish setting (García *et al.*, 2012). Meanwhile, from the developing country perspective, few studies (e.g. Johl *et al.*, 2013; Mat Zain *et al.*, 2006) have focused on AC and IAF effectiveness. Therefore, based on a unique data set from primary (survey questionnaire) and secondary (company annual reports and DataStream) sources, we aim to answer the following research questions:

RQ1. Do AC quality and IAF quality influence FRQ?

RQ2. Do AC quality and IAF quality mediate the relationship between firm size and FRQ?

To address our research questions, we utilize 157 observations from 2018 to 2020 to estimate abnormal accruals (a proxy for FRQ). The results reveal that firm size, AC quality and IAF quality are positively and significantly related to FRQ. The results also indicate that IAF quality mediates the relationship between firm size and FRQ, while AC quality has found no mediation effect on FRQ.

This study contributes to the AC and internal audit literature and has significant implications for concerned parties (e.g. regulators and business entities) regarding several aspects. Firstly, this study examines the association between firm size, AC and IAF quality and FRQ, constructing composite scores for ACQ and IAFQ using the quartile scheme method, which is unique and has not been adopted in the prior literature. Secondly, unlike prior studies that have addressed the firm size effects on the AC's effectiveness and the IAF's performance (Sarens and Abdolmohammadi, 2011; Phornlaphatrachakorn, 2020), this study contributes to a deeper understanding of the relationship between firm size and FRQ through the effects of the AC and IAF quality. Thirdly, to the best of the authors' knowledge, this is the first empirical study to address the impact of the AC and IAF quality in the relationship between firm size and FRQ, the results of which will be useful for the entities, investors and regulators in realizing the importance of the AC and IAF quality in producing high-quality financial reporting.

The remainder of this paper is structured as follows. The following section provides a review of the pertinent literature and hypothesis development. The research methodology is described in Section 3, followed by the empirical results. The paper ends with a summary of the conclusions.

2. Literature review and hypotheses development

2.1 Prior studies on firm size, AC quality, IAF quality and financial reporting quality

In this study, we examine the relationship between firm size and FRQ with the effect of governance monitoring mechanisms (i.e. AC and IAF). The AC and IAF are the decisive mechanisms to reduce agency conflict. Of course, firm size has an impact on AC and IAF effectiveness by providing financial resources. The AC plays a crucial role in reducing agency problems and information asymmetry, improving financial reporting reliability (Klein, 2002). Similarly, IAF quality plays a significant role in ensuring FRQ (Abbott *et al.*, 2016; Gros *et al.*, 2017). As mentioned, earlier studies have reported limited investigations of the firm size, mostly in developed economic settings. This stream of research includes a group of studies focusing on examining the firm size effects on AC effectiveness (Deli and Gillan, 2000; Klein, 2002) and other groups of studies that investigate the firm size relationship with the IAF (Carcello *et al.*, 2005; Sarens and Abdolmohammadi, 2011).

Whereas prior research related to the AC and IAF (Alzoubi, 2019; García *et al.*, 2012; Gebrayel *et al.*, 2018; Phornlaphatrachakorn, 2020) has investigated the AC characteristics and IAF relationship with FRQ, this stream of research has marginally emphasized the AC determinants' relationship with FRQ and highlighted in the internal audit without considering the IAF quality attributes. However, the IAF quality attributes play an important role in ensuring FRQ (Abbott *et al.*, 2016; Gros *et al.*, 2017; Prawitt *et al.*, 2009). In the Bangladeshi context, a few studies have investigated the impact of AC characteristics and their effects on organizations' performance. Rahman *et al.* (2019) reported that the AC size assists in improving the profitability of firms, but AC independence is scarce. Adhikary and Mitra (2016) showed that AC independence is related to firm size and leverage. They confirmed that large firms with potential opportunities reduce the freedom of the AC, while firms with high leverage demand AC independence to ensure FRQ. Ali and Meah (2021) investigated the factors of AC independence and reported that larger corporate boards and independent directors increase AC independence. Thus, the current study examines the impact of AC quality and IAF quality on FRQ, which has not been widely tested in developed or developing country contexts. Figure 1 shows the conceptual framework for this study.

2.2 Hypothesis development

2.2.1 Relationship between firm size and AC quality. Firm size is one of the crucial factors for improving AC quality. The resource dependence theory explains that the AC may rely on the

board members for financial resources to attain a competitive advantage in internal monitoring efficiency (Hasan *et al.*, 2020). AC quality also helps to reduce agency problems by improving its supervision of the board and management (Ruiz-Barbadillo *et al.*, 2007). Thus, company size and required resource allocation are important aspects to ensure AC quality and a sound internal monitoring system. Firm size is also a determinant of the audit fees and auditor choices as larger companies need to exert greater audit effort due to their high business volume (O'Sullivan, 1999). Klein (2002) examined the relationship between the AC and the board characteristics and found that a larger firm size has a significant effect on the AC effectiveness. This finding reflects that the larger firms provide more resources for AC quality than the smaller firms. Deli and Gillan (2000) investigated factors related to the AC composition and showed that the firm size is positively associated with the AC, while DeZoort *et al.* (2002) suggested that AC effectiveness is related to qualified members with the resources and authority to secure shareholders' interest by producing reliable financial reporting through decent oversight efforts. Hence, it is likely that firm size plays a decisive role in improving AC quality. Based on the above findings, the following hypothesis is stated:

H1a. Firm size is positively associated with AC quality.

2.2.2 Relationship between firm size and IAF quality. The IAF needs to have adequate resources to ensure its effectiveness. The resource dependence theory posits that the management may depend on the board of directors for the necessary resource allocation to increase effective performance (Cohen *et al.*, 2008). Moreover, the IAF should be well resourced to enhance its quality as it makes a significant contribution to decreasing the agency conflict and minimizing agency costs (Adams, 1994). Large firms are likely to allocate more resources to their IAF to meet their potential needs (training, staffing and external certification). Sarens and Abdolmohammadi (2011) investigated this issue utilizing data from the Belgian context and showed that the firm's size is one of the significant factors in the IAF's size and effectiveness. Carcello *et al.* (2005) found a positive association between the firm size and the financial budget for the IAF. They specified that a larger budget is associated with the large financial resources of a firm, which has a positive impact on the IAF. Krane and Eulerich (2020) examined the drivers of IAF internationalization. The study revealed that the firm size is one of the drivers associated with the degree of IAF internationalization. Moreover, the IAF size, existence and budget are influenced by several firm-level determinants. Alhajri (2017) contended that the size of the IAF is not significantly related to the size of the firm, though the result is not consistent with those of other similar studies, possibly due to the data sample being from a smaller market size. Goodwin-Stewart and Kent (2006) examined this issue using data related to Australian companies and found that IAF effectiveness is strongly related to firm size and risk management. Thus, large firms allocate more resource to the IAF to improve internal monitoring efficiency. The following hypothesis is suggested:
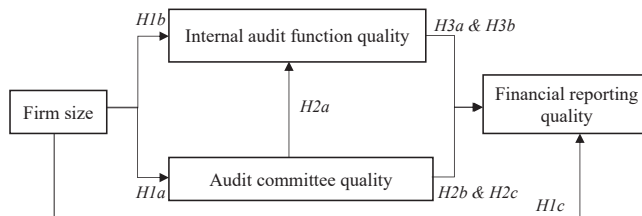
H1b. Firm size is positively associated with IAF quality.

Figure 1.
The conceptual model of the firm size–financial reporting quality relationships

2.2.3 Relationship between firm size and financial reporting quality. The resource dependence theory describes board members as being responsible for allocating resources to internal monitoring mechanisms to attain competitive advantages in FRQ (Hasan *et al.*, 2020). Large companies usually employ more resources to ensure better monitoring mechanisms and high-quality financial reporting. DeZoort *et al.* (2002) noted that large firms provide more resources for AC and IAF effectiveness to prepare high-quality financial reporting through their stringent monitoring system. Xie *et al.* (2003) explored the role of the AC, executive committee and board of directors in preventing earnings management. The findings of the studies showed that earnings management is less likely to happen in companies that include more independent board members and corporate expertise. They also concluded that firm size is positively related to board independence. Several more relevant studies have witnessed firm size as being positively and significantly related to FRQ (Abbott *et al.*, 2016; Alzeban, 2019; Alzoubi, 2019; Gros *et al.*, 2017; Johl *et al.*, 2013; Mardessi, 2021; Phornlaphatrachakorn, 2020). Based on the above, the research findings confirm that firm size significantly affects FRQ. Hence, we expect the firm size to be crucial to reducing earnings management and ensuring FRQ, leading to the following hypothesis:

H1c. Firm size is positively associated with FRQ.

2.2.4 Relationship between AC quality and IAF quality. AC is a unique form of CG mechanism for overseeing the IAF's performance and FRQ. It is required to review internal audit programs to maintain the adequacy of the scope of internal audits (Mat Zain *et al.*, 2006). The IAF is also increasingly being trusted by ACs to deliver their CG responsibilities. More specifically, the AC corresponds with the IAF to diminish the information asymmetry problem between executive managers and itself. In this regard, AC characteristics are crucial to ensure the supervision of IAF quality. Carcello *et al.* (2005) argued that to ensure IAF quality and assistance for the AC, the AC should monitor the IAF's performance. Prior studies have predominantly focused on AC effectiveness rather than AC quality characteristics' effects on IAF quality. Concerning the relationship between AC characteristics and IAF attributes, the BRC (1999) argued that frequent meetings between the AC and the internal auditors improve IAF effectiveness. Haron *et al.* (2005) investigated the companies' compliance requirements relating to the AC in the Malaysian context. They found that AC meetings and independence are likely to be beneficial to IAF quality improvement. Earlier studies also noted that AC characteristics positively and significantly affect IAF quality (Mat Zain *et al.*, 2006). From the audit fees perspective, Usman *et al.* (2022) addressed the relationship between ACs and audit fee classification shifting. They reported that AC's financial expertise and frequency of audit meetings are negatively related to audit fee classification shifting. However, Krishnan and Lee (2009) emphasized the AC's financial expertise, which helps to increase IAF quality. AC independence involves a certain degree of support and adds quality to the IAF (Mat Zain *et al.*, 2006). Thus, AC characteristics are likely significant drivers in enhancing IAF quality. The hypothesis is formulated as follows:

H2a. AC quality is positively related to IAF quality.

2.2.5 Relationship between AC quality and financial reporting quality. The AC performs a tremendous role in ensuring the integrity of financial reporting by reducing earnings management, fraudulent reporting and illegal actions (Asiedu and Deffor, 2017). AC characteristics (i.e. size, independence, meetings and financial expertise) are crucial to monitoring financial reporting procedures. Abbott *et al.* (2004) noted that an AC's characteristics assist in enhancing its efficiency and performance in the preparation of better financial reporting. Likewise, Raimo *et al.* (2021) confirmed that AC attributes positively affect the publication of high-quality integrated reports. From the firms' disclosure point of view, the firms with AC's quality attributes significantly influence the disclosure of

voluntary information (Agyei-Mensah, 2018) and positively affect intellectual capital disclosure (Astuti *et al.*, 2020). Substantial archival literature has reported the effects of AC determinants on FRQ (e.g. Alzoubi, 2019; García *et al.*, 2012; Gebrayel *et al.*, 2018; Mardessi, 2021; Phornlaphatrachakorn, 2020). Nour and Tanbour (2023) conclude that there is a high impact of the attributes (integrity, objectivity, confidentiality and competency) on the effectiveness of internal auditing. Salem *et al.* (2021) conclude that audit quality restrains earnings management practices of Islamic bank managers. Moreover, prior studies have addressed the effects of the AC's attributes on FRQ and showed their relative importance. For instance, several studies have found that AC size is significantly associated with FRQ and timeliness of financial reporting as they share diverse skills and experiences (Alqaraleh and Nour, 2020; Dhaliwal *et al.*, 2010), while others have shown that it is irrelevant to the financial reporting process (Mardessi, 2021; Xie *et al.*, 2003). Related to the AC meetings, an AC can be more effective when AC members hold frequent meetings. Gebrayel *et al.* (2018), Xie *et al.* (2003) and Alqaraleh and Nour (2020) suggested that regular meetings between AC members are negatively related to the level of earnings management and better financial statement monitoring. However, Shahkaraiah and Amiri (2017) and Khatib and Nour (2021) showed that AC meetings are negatively and significantly related to FRQ. Conversely, AC independence is often considered an imperative tool to enhance AC efficiency in overseeing the financial reporting process. Several studies have investigated whether AC independence affects FRQ. The results reflect a positive association between AC independence and FRQ (Klein, 2002). The AC's financial expertise is deemed crucial to the AC's effectiveness as it requires the performance of multiple duties that need a high level of financial knowledge (DeFond *et al.*, 2005). Abbott *et al.* (2004) posited that having financial expertise in AC could be crucial for FRQ. Dhaliwal *et al.* (2010) revealed that AC financial literacy increases FRQ. Based on the above literature findings, the AC's characteristics are important to ensuring FRQ. Moreover, AC quality significantly affects the relationship between firm size and FRQ. Hence, it is likely that AC quality mediates the association between firm size and FRQ. Thus, the hypotheses are posited as follows:

H2b. AC quality is positively associated with FRQ.

H2c. AC quality mediates the relationship between firm size and FRQ.

2.2.6 Relationship between IAF quality and financial reporting quality. IAF quality depends on the outcomes of better AC quality, which leads to higher FRQ. Professional agencies (e.g. AICPA, 2013) have stipulated that IAF quality attributes compress internal auditor competence, independence and work performance. Earlier literature (e.g. Abbott *et al.*, 2016; Alzeban and Sawan, 2013; Prawitt *et al.*, 2009) has considered these attributes to be indicators of IAF quality and suggested that FRQ is significantly related to the IAF quality attributes. Archival studies have largely emphasized the IAF's competence and independence to examine the relationship between IAF quality and FRQ (Prawitt *et al.*, 2009).

Our third hypothesis is related to the relationship between IAF quality and FRQ. The agency theory explains the agency problem between the principal (shareholders) and agent (management) (Jensen and Meckling, 1976). The IAF assists in alleviating agency conflicts and information asymmetry (Adams, 1994) and detecting fraud in the preparation of financial reporting (Coram *et al.*, 2008). Thus, we expect that the IAF quality attributes decrease earnings management and enhance FRQ. Previous literature (Abbott *et al.*, 2016; Gros *et al.*, 2017; Prawitt *et al.*, 2009) has asserted that IAF quality is associated with higher FRQ. Prawitt *et al.*'s (2009) archival study was the first to examine the relationship between IAF quality attributes and FRQ using the GAIN database. They measured IAF quality determinants by following external auditing standards relating to competence and objectivity. They confirmed a positive relationship between IAF quality and FRQ. Abbott *et al.* (2016)

explored IAF quality (competence and independence) joint effects on FRQ using a survey and archival data. They reported that IAF quality positively affects FRQ. Gros *et al.* (2017) addressed the relationship between IAF quality and FRQ in the German setting and revealed that IAF quality reduces earnings management and ensures a high level of FRQ. Phornlaphatrachakorn (2020) reported that IAF quality is positively and significantly related to FRQ and organizational success.

Whereas several studies have reported contrary results, Johl *et al.* (2013), for example, noted a negative relationship between IAF quality and FRQ; however, some IAF quality attributes showed a significant association with FRQ. Similarly, García *et al.* (2012) indicated that the IAF is negatively related to earnings management. These literature findings are consistent; however, they primarily emphasize the formation and presence of an IAF but overlook the design or qualities of the IAF. Despite several negative results concerning IAF quality and FRQ, we still believe that IAF quality attributes improve the performance of internal auditors and assist in reducing financial reporting errors and enhancing FRQ. Moreover, IAF quality plays a decisive role in the relationship between firm size and FRQ. Hence, we expect that IAF quality mediates the relationship between firm size and FRQ. The following hypotheses are proposed:

H3a. IAF quality is positively associated with FRQ.

H3b. IAF quality mediates the relationship between firm size and FRQ.

3. Research methodology
3.1 Sample and data collection
Prior internal audit research that relied on case studies, questionnaires and interviews is scarce (Hazaea *et al.*, 2021). This study addresses the role of the IAF quality in the relationship between AC quality and FRQ, utilizing a survey questionnaire and archival data from the Bangladesh perspective. Bangladeshi companies were selected because AC and IAF in Bangladesh are significantly different from the US and European settings in terms of policy implication and inconsistent corporate compliance. Moreover, a limited number of studies have been observed on these aspects in Bangladesh. A survey was conducted on non-financial firms listed on the DSE in Bangladesh. Consistent with the earlier AC and internal audit research (e.g. García *et al.*, 2012; Alzoubi, 2019), our survey targeted the head of internal auditors, AC members and chief financial officers (CFOs). The survey posed questions about the participant company's general information, IAF service provided, IAF quality attributes and AC information. We emailed our survey questionnaire to all listed non-financial firms (223) in February 2021 and received a total of 48 useable responses. To promote a high volume of responses from the participants, we sent two reminders every 2 weeks after the beginning and subsequent follow-up email. After the fourth week (March 2021), we made a telephone call to all non-responding recipient firms to encourage them to participate in the survey and obtained an additional 37 answers, thereby increasing the total to 85 responses (a company-specific response rate of 38%) (Table 1).

Of the total 85 responses, two responses were eliminated due to incompleteness and double submission by the same participant, bringing our total to 83. We calculate AC quality and IAF quality using 80 survey responses because three more responses were eliminated as the respondent company's financial statements did not match the abnormal accruals (ABNACC), as shown in Table 1. We estimate the ABNACC of the modified Jones model using 157 non-financial companies from eight distinctive industries from 2018 to 2020, as presented in Table 1. The abnormal accruals samples (157) are high than the questionnaire response (80) because the higher number of observations provides better accruals estimation as used by Abbott *et al.* (2016), Gros *et al.* (2017) and Johl *et al.* (2013) and subsequently merge them with

	Sample firms	%
Survey sample description and responses breakdown		
Total sample size	223	
Questionnaires distributed	223	100
Questionnaire responses received	85	38
Missing questionnaires information (Unusable)	−2	1
DataStream missing data of respondent firms	−3	2
Final responses used merged with dependent and control data	80	35
Sample description of discretionary accruals and Kothari m-Jones model		
Total number of DSE listed firms (financial and non-financial)	604	
Total listed financial firms	367	
Total listed non-financial firms	223	100
Firms excluded due to the small industry	−26	12
Sample firms missing data items for model estimation	−40	18
Total observation used for abnormal accruals estimation - Kothari m-Jones model	157	70

Table 1.
Sample selection
process

survey data. The archival data are extracted from secondary sources (e.g. company annual reports, Thomson Reuters DataStream and the DSE official website) to estimate the dependent variables (ABNACC) and continuous variables. Financial institutions are excluded from the sample due to their unique industry regulations and accounting implications.

3.2 Variable measurement

3.2.1 Dependent variable. To measure FRQ, we apply the *ABNACC* model as a proxy for FRQ, following the prior literature (Abbott *et al.*, 2016; Alzeban, 2019; Johl *et al.*, 2013; Prawitt *et al.*, 2009). We adopt the performance-adjusted cross-sectional modified Jones model (Dechow *et al.*, 1996) to estimate abnormal accruals, as described by Kothari *et al.* (2005). Kothari *et al.*'s model includes both an intercept term and a measure of performance. Following previous research, we measure industry-specific coefficients to calculate abnormal accruals based on the year and company (ISIN code) for all listed non-financial firms (Dhaka Stock Exchange) in DataStream 2020. We estimate ABNACC as the residual from the following regression:

$$\left[\frac{TA_{it}}{A_{it-1}}\right] = \beta_0 + \beta_1 \left[\frac{1}{A_{it-1}}\right] + \beta_2 \left[\frac{(\Delta REV_{it} - \Delta AR_{it})}{A_{it-1}}\right] + \beta_3 \left[\frac{PPE_{it}}{A_{it-1}}\right] + \beta_4 \left[\frac{NI_{it}}{A_{it-1}}\right] + \varepsilon_{it}$$

where, TA_{it} is the total accruals for estimation firm i in year t, A_{it-1} is the total assets at $t-1$ for firm i, ΔREV_{it} is the change in net revenue, ΔAR_{it} is the change in accounts receivable, PPE_{it} is the gross property, plant and equipment and NI_{it} is the net income for estimation firm i in year t. We then investigate the ABNACC's relationship with the IAFQ score to establish whether they are positively or negatively associated.

3.2.2 Independent variable. The firm size (FIRMSIZE) is computed using the total assets of the company (Abbott *et al.*, 2016; Mat Zain *et al.*, 2006). We expect that *FIRMSIZE* (log of company assets) increases the size of the abnormal accruals (Dechow and Dichev, 2002). Firm size data extract from the company's annual reports and DataStream sources. Consistent with prior related studies, we expect that the *FIRMSIZE* is positively associated with FRQ (Abbott *et al.*, 2016; Gros *et al.*, 2017; Mat Zain *et al.*, 2006).

To measure AC quality (*ACQ score*), we used survey questionnaire responses and company annual report information related to the AC characteristics (i.e. size, independence, meetings and financial literacy). AC size is number of AC members (Mardessi, 2021).

AC independence is the proportion of independent members of the AC (Abbott *et al.*, 2004). AC financial expertise is calculated by the proportion of AC members with financial experts (Abbott *et al.*, 2004; Carcello *et al.*, 2005). AC meetings are the number of meetings held between AC members in a financial year (García *et al.*, 2012). Subsequently, we calculate quartile scores on all AC components and cumulated them to construct an AC quality score, as shown in Table 2.

While IAF quality (*IAFQ score*) is computed using five IAF quality factors (i.e. internal audit employee work experience, professional certification, average annual training days, IAF independence and IAF work performance) in questionnaire responses (Abbott *et al.*, 2016; Gros *et al.*, 2017; Prawitt *et al.*, 2009). IAF quality independence and work performance are measured by applying the principal component method (PCM) to check the correlation between variables (KMO and Bartlett's test). Afterward, we utilize a quartile scouring scheme on all five IAF quality attributes to measure a composite score of IAF quality. The quartile scores of five IAF quality attributes are accumulated to construct *the IAFQ score*, as presented in Table 3.

3.2.3 Control variables. Following prior studies, we encompass several firm-specific factors that may influence the level of FRQ, as shown in Table 4. We control *AGE* is the number of years the company appeared on the DataStream, it includes because firms may experience several accruals patterns during the firm life cycle (Abbott *et al.*, 2016; Prawitt *et al.*, 2009). We include *ROA* (Return on Assets) and *LOSS* to control for performance because low performance increases an incentive for accruals management. Moreover, firms' managers that are struggling may have increased incentives to manage earnings, thus we include *ROA*

	Description	Measurement technique
ACQ-characteristics		
(1) AC size	The number of AC members	Quartile score
(2) AC independence	The percentage of independent AC members	Quartile score
(3) AC meetings	The number of AC meetings held in one year	Quartile score
(3) AC financial expertise	The proportion of financial expertise AC members	Quartile score
ACQ score (AC size + AC independence + AC meetings + AC financial expertise)		Cumulative score

Table 2.
AC quality score
(ACQ score)

	Description		Measurement technique
IAFQ-attributes			
(1) IAF competence			
(a) Internal auditor work experience	Percentage of internal auditors work experience, who possess at least three years of professional experience		Quartile score
(b) Internal auditor professional certification	Percentage of internal auditors with one or more audit certification		Quartile score
(c) Internal auditor training	Internal auditors' average number of training days during last year		Quartile score
(2) IAF independence	Likert-scale survey responses factorize to obtain useable data	Factor analysis	Quartile score
(3) IAF work performance	Factor test performs on IAF work performance-related Likert-scale questions	Factor analysis	Quartile score
IAFQ score (Internal auditor work experience + certification + training + IAF independence + IAF work performance)			Cumulative score

Table 3.
Internal audit function
quality score
(IAFQ Score)

Variable	Description
ABNACC (FRQ)	FRQ estimates using the total value of abnormal accruals adopting the Kothari *et al.* (2005) version of the modified Jones model. Abnormal accruals are the error term of the equation below: $[TA_{it}/A_{it-1}] = \beta0 + \beta1\,[1/A_{it-1}] + \beta2\,[(\Delta REV_{it} - \Delta AR_{it})/A_{it-1}] + \beta3[PPE_{it}/A_{it-1}] + \beta4\,[NI_{it}/A_{it-1}] + \varepsilon_{it}$ Where TA is the total accruals for estimation firm i for year t, A_{it-1} is the total assets at $t-1$ for firm i, ΔREV_{it} is the change in net revenue, ΔAR_{it} is the change in account receivable, PPE_{it} is gross property, plant, and equipment, and NI_{it} is the net income for estimation firm i for year t
FIRMSIZE	Natural log of total assets
ACQ score	ACQ composite score construct using AC characteristics (size, independence, meetings, and financial expertise)
IAFQ score	IAFQ score is the unweighted average score of IAF competence (employee experience, certification, training), IAF independence, and work performance
AGE	The number of years since a firm first appearance in the DataStream database
LEVERAGE	Debt as a proportion of total assets
CFO	Cash flow from operations scaled by lagged total assets
SGROWTH	Sales growth (sales of current period minus sales of prior year) divided by sales of the prior year
CFOVOL	Standard deviation of Cash flow from operations for 2018–2020
LOSS	Dummy variable equal to 1 if a company experienced a loss in the fiscal year 2020, 0 otherwise
ROA	Net income scaled by total assets
BINDP	Percentage of the independent directors to the total number of board members

Table 4.
Variable definition and measurement

and *LOSS. ROA* also may affect the computation of abnormal accruals and leads to a positive or negative relationship between *ROA* and abnormal accruals (Abbott *et al.*, 2016). Whereas firms with repeated loss may have less value in financial statements (Klein, 2002). *ROA* computes as net income scaled by total assets and *LOSS* (coded "1" if the firm experienced a loss in the preceding year, "0" otherwise) (Tanyi and Smith, 2015). CFO (cash flows from the operation), *CFOVOL* (Operation cash flows volatility) and *SGROWTH* (sales growth from the preceding year) are included because these variables may affect the accrual estimation (Dechow *et al.*, 1996). We expect that variable *LEVERAGE* (total debt/total assets) will be related to the company's nonovulation of debt covenants and income-decreasing accruals (Bravo and Reguera-Alvarado, 2018). Earlier studies reveal that independent directors (*BINDP*) play an important role in strengthening CG and enhancing FRQ (Bravo and Reguera-Alvarado, 2018).

3.3 Model specification

We use the structural equational model (SEM) to examine the mediation effect of the AC quality and IAF quality on the relationship between firm size and FRQ. The SEM is an appropriate statistical method for a composite-based approach (Sarstedt *et al.*, 2016). Additionally, least squares (OLS) regression models are utilized to test the variables' relationships. In this study, we test the effect of the IAF quality and AC quality on FRQ as estimated by abnormal accruals (*ABNACC*). The following models utilize to test our hypotheses:

$$ACQ_i = \beta_0 + \beta_1 FIRMSIZE_i + \beta_2 AGE_i + \beta_3 LEVERAGE_i + \beta_4 CFO_i + \beta_5 SGROWTH_i$$
$$+ \beta_6 COFVOL_i + \beta_7 ROA_i + \beta_8 BINDP_i + \varepsilon_i \tag{1}$$

$$ABNACC_i = \beta_1 ACQ_i + \beta_2 IAFQ_i + \beta_3 FIRMSIZE_i + \beta_4 AGE_i + \beta_5 LEVERAGE_i + \beta_6 CFO_i$$
$$+ \beta_7 SGROWTH_i + \beta_8 COFVOL_i + \beta_9 ROA_i + \beta_{10} BINDP_i + \varepsilon_i$$
(2)

$$IAFQ_i = \beta_0 + \beta_1 FIRMSIZE_i + \beta_2 AGE_i + \beta_3 LEVERAGE_i + \beta_4 CFO_i + \beta_5 SGROWTH_i$$
$$+ \beta_6 COFVOL_i + \beta_7 ROA_i + \beta_8 BINDP_i + \varepsilon_i$$
(3)

$$IAFQ_i = \beta_0 + \beta_1 ACQ_i + \beta_2 FIRMSIZE_i + \beta_3 AGE_i + \beta_4 LEVERAGE_i + \beta_5 CFO_i$$
$$+ \beta_6 SGROWTH_i + \beta_7 COFVOL_i + \beta_8 ROA_i + \beta_9 BINDP_i + \varepsilon_i$$
(4)

4. Results

4.1 Descriptive statistics

Tables 5–7 present the summary statistics of the study. Tables 5 and 6 contain the descriptive results for the 80 respondent firms' IAF and AC quality characteristics scores. The survey results show that, on average, about three-quarters of the IAF employees have more than 3 years of works experience, and nearly 25% have a professional certification, as shown in Table 5. The annual training days vary between 0 and 60 days, with a mean (median) of about 19 (30) days. The IAF independence mean (median) is 1 (0.8788), which is lower than the IAF work experience of 2.99. The overall IAFQ score mean (median) is 3.3170 (3.25), with a minimum value of 2 and a maximum value of 4.75, which reflects a moderate variation that exists between firms, as shown in Table 5.

IAF quality attributes	Obs	Mean	Median	SD	Min	Max
IAF competence	80	2.0152	2	0.4813	1	3
% Auditors with >3 years' work experience	80	0.7651	0.75	0.1603	0.4	1
% Auditors with external certification	80	0.2464	0.25	0.1434	0	0.6666
Internal auditor training days per year	80	19.06	20	9.012	0	60
IAF independence	80	1	0.8788	0.7074	0.1472	4.0651
IAF work performance	80	2.9999	2.9787	0.6463	0.5184	4.4305
Total IAFQ score	80	3.3170	3.25	0.6357	2	4.75

Note(s): All IAF quality components definitions are defined in Table 3
To obtain a positive value of IAF independence and IAF work performance, we recalibrated both factor values by adding 2

Table 5.
IAFQ score
measurement

ACQ-characteristics	Obs	Mean	Median	SD	Min	Max
AC size	80	3.4268	3	0.6826	3	6
AC meeting	80	4.5853	4	1.1913	3	10
AC independence	80	1.4268	1	0.6067	1	4
AC financial expertise	80	1.7195	1	0.9161	1	5
Total ACQ score	80	3.1209	3.25	0.4211	1.75	3.75

Note(s): All IAF quality components definitions are defined in Table 2

Table 6.
ACQ score
measurement

Variable name	Obs	Mean	Median	SD	Min	Max
ABNACC	80	−0.0045	0.0035	0.1672	−0.5618	0.2199
FIRMSIZE (TK'000)	80	1,224,790	3,610,384	2,768,810	64,247	292,717
LFIRMSIZE	80	22.0380	22.0259	1.7349	18.0728	26.0224
ACQ	80	3.1209	3.25	0.4211	1.75	3.75
IAFQ	80	3.3170	3.25	0.6357	2	4.75
AGE	80	14.80	12	8.9783	2	28
LEVERAGE	80	0.4983	0.4293	0.4644	0.0195	3.0409
CFO (TK'000)	80	719,612	121,709	266,836	−101597	248,204
CFO	80	0.0568	0.0443	0.0856	−0.1029	0.3475
SGROWTH	80	0.0659	0.0542	0.7447	−0.6365	0.8733
CFOVOL	80	0.0462	0.0372	0.0362	0.0028	0.2100
LOSS	80	0.1102	0	0.3137	0	1
ROA	80	0.0380	0.0321	0.0891	−0.2899	0.1894
BINDP	80	0.2493	0.3010	0.1907	0	0.6989

Note(s): All variable definitions describe in Table 4
ABNACC is Kothari et al.'s (2005) form of the modified Jones model to estimate abnormal accruals, FIRMSIZE is the taka value of total assets in millions, AGE is the years since the company's appearance in the DataStream, LEVERAGE equals the total debt (sum of long- and short-term debt) of a company, CFO is the cash flow from operations scaled by lagged total assets. ROA equals a return on assets, LOSS is coded "1" if the firm had losses, and "0" otherwise, SGROWTH is the percentage of one-year sales growth, CFOVOL is the standard deviation of the cash flows from operations for 2018–2020

Table 7.
ABNACC and control variables summary statistics

Table 6 provides the descriptive statistics for AC quality scores. The results show that the AC size average (median) is 3.42 (3), with the lowest number being three and the highest of 10 members. Regarding the average number of meetings held between AC members, the mean (median) is about 4.58 (4), which indicates that all the respondent companies meet the requirement of the Bangladeshi Code of CG regarding the minimum number of AC size and number of meetings (BSEC, 2018). The results further indicate that the mean (median) number of AC independent members is 1.42 (1), with the lowest value of 1 and the highest value of 4, while the minimum number of financial expertise in the AC is 1 and the maximum is 4, with a mean of 3.12. This shows that all the selected companies comply with the Bangladeshi CG code's minimum requirement concerning AC independent and financial expert members (BSEC, 2018).

Table 7 presents the descriptive scores for the ABNACC and control variables. The results show that the mean (median) ABNACC is −0.0045 (0.0035) and ranges from the lowest score of −0.5618 to the highest score of 0.2199. The results also indicate that the sample firms' assets size has a mean (median) of TK12.24 million (TK36.10 million) and their mean (median) age is 14.80 (12) years. While the sample firms' leverage is relatively high (mean 49.83%; median of 42.93%), their operating cash flow is TK71.96 million (mean) and TK12.170 million (median). Notably, the average sales growth from 2019 to 2020 was 6.59%, and the mean (median) ROA is 3.8% (3.21%), with a range from a minimum value of −2.9% to a maximum value of 18.94%, which indicates that a financial performance gap exists between companies. Additionally, it shows that the mean of board of directors' independence is 24.93%, with the lowest values of 0 and the highest of 69.89%.

Table 8 reports the Pearson correlation coefficients between ABNACC, FIRMSIZE, ACQ and IAFQ results. The correlation shows that the ABNACC is negatively correlated with FIRMSIZE, ACQ and IAFQ, which supports our hypotheses. We undertake a robustness check for multicollinearity in the model and carry out an assessment of the variance inflation factor (VIF) (Table 8). The VIF value is at a satisfactory level, showing no multicollinearity

Variable	1	2	3	4	5	6	7	8	9	10	11	12	VIF
1. ABNACC	1												
2. LFIRMSIZE	−0.0683	1											1.30
	(0.5473)												
3. ACQ score	−0.0707	−0.0719	1										1.20
	(0.5333)	(0.5265)											
4. IAFQ score	−0.0964	0.2738***	0.0042	1									1.52
	(0.3951)	(0.0140)	(0.9707)										
5. AGE	−0.0449	−0.2120	−0.1056	−0.0071	1								1.33
	(0.6923)	(0.0603)	(0.3513)	(0.9504)									
6. LEVERAGE	−0.0848	−0.1166	0.0436	−0.0059	−0.2491**	1							1.61
	(0.4544)	(0.3029)	(0.7007)	(0.9585)	(0.0259)								
7. LCFO	−0.2260**	0.0845	0.1322	0.0557	−0.0632	−0.1154	1						1.57
	(0.0438)	(0.4563)	(0.2424)	(0.6238)	(0.5773)	(0.3079)							
8. SGROWTH	0.0906	0.1329	0.3078***	0.1211	0.1252	−0.3369***	0.2510**	1					1.58
	(0.4241)	(0.2400)	(0.0055)	(0.2846)	(0.2684)	(0.0022)	(0.0247)						
9. LCFOVOL	0.1733	−0.1357	0.1182	0.0243	0.1918*	0.1692	0.1728	−0.0784	1				1.39
	(0.1242)	(0.2300)	(0.2963)	(0.8308)	(0.0883)	(0.1335)	(0.1254)	(0.4895)					
10. LOSS	−0.3354***	−0.2528**	−0.1135	0.0655	0.2784***	0.4370***	−0.2014*	−0.2054	−0.1200	1			2.29
	(0.0024)	(0.0237)	(0.360)	(0.5625)	(0.0124)	(0.000)	(0.0733)	(0.0676)	(0.2910)				
11. ROA	0.1476	0.1911	0.1237	0.1482	−0.0621	−0.2753**	−0.5423***	0.2107	0.0946	−0.5257***	1		2.37
	(0.0686)	(0.0896)	(0.2742)	(0.1894)	(0.5842)	(0.0135)	(0.000)	(0.0606)	(0.4040)	(0.000)			
12. LBINDP	−0.1457	0.3748***	0.1878*	0.0391	−0.1102	−0.1988*	0.2606**	0.0529	0.0909	0.1021	0.1009	1	1.73
	(0.1971)	(0.0006)	(0.0953)	(0.7306)	(0.3305)	(0.0771)	(0.0196)	(0.6409)	(0.4220)	(0.3673)	(0.3732)		

Note(s): Variables defined in Table 4. p values reported in parentheses
Statistical significance levels: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table 8.
Pairwise correlation matrix

problem (Gujarati, 2003). Specifically, the highest VIF level is 2.29 (less than 10), which indicates that multicollinearity is no longer a problem in the model.

4.2 Multivariate analysis
Table 9 reports the SEM path coefficients and hypothesis test results of the relationship between firm size, AC quality, IAF quality and ABNACC (a proxy for FRQ). Table 10 shows the ordinary least squares (OLS) regression results of the FRQ relationship with firm size, AC

Hypotheses	Relationships	Coefficients	Standard error	*t*-statistics
H1a	FIRMSIZE→ACQ	0.0170	0.0264	0.64
H1b	FIRMSIZE→IAFQ	0.1247	0.0372	3.03**
H1c	FIRMSIZE→FRQ	−0.0101	0.0034	−2.92**
H2a	ACQ→IAFQ	−0.0349	0.1572	−0.22
H2b	ACQ→FRQ	−0.0268	0.0140	−1.91*
H3a	IAFQ→FRQ	−0.0172	0.0092	−1.87*

Note(s): *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$, RMSEA = 0.08, CFI = 0.81, GFI = 0.75, SRMR = 0.05, R^2 = 0.6662

Table 9.
Results of path coefficient and hypotheses testing

Independent variables	Dependent variables					
	ACQ	IAFQ	FRQ	IAFQ	FRQ	FRQ
Intercept	3.9861***	0.5615	0.2742**	0.6121	0.3812***	0.2839***
	(0.0288)	(1.0106)	(0.0851)	(1.2520)	(0.1032)	(0.0841)
FIRMSIZE	−0.0243	0.1247**	−0.0101**	0.1244**	−0.0107**	−0.0079**
	(0.0445)	(0.0439)	(0.0037)	(0.0445)	(0.0036)	(0.0038)
ACQ				−0.0127	−0.0268*	
				(0.1832)	(0.0150)	
IAFQ						−0.0172*
						(0.0099)
AGE	−0.0096*	−0.0011	−0.0006	−0.0012	−0.0009	−0.0006
	(0.0054)	(0.0083)	(0.0007)	(0.0085)	(0.0007)	(0.0006)
LEVERAGE	0.2369**	−0.0533	0.0183	−0.0503	0.0247*	0.0174
	(0.1031)	(0.1569)	(0.0132)	(0.1639)	(0.0135)	(0.0130)
CFO	−0.1364	−0.1169	−0.6333***	−0.1186	−0.6369***	−0.6353***
	(0.6246)	(0.9507)	(0.0801)	(0.9579)	(0.0789)	(0.0789)
SGROWTH	0.6982**	0.2609	−0.0053	0.2698	0.0133	−0.0008
	(0.2167)	(0.3299)	(0.0278)	(0.3560)	(0.0293)	(0.0275)
COFVOL	0.0974*	−0.0389	0.0044	−0.0376	0.0070	0.0037
	(0.0577)	(0.0878)	(0.0074)	(0.0902)	(0.0074)	(0.0073)
LOSS	−0.2362	0.6331*	−0.0288	0.6301*	−0.0352	−0.0179
	(0.1758)	(0.2676)	(0.0225)	(0.2729)	(0.0224)	(0.0231)
ROA	−0.3675	1.2972	0.5295***	1.2925	0.5197***	0.5520***
	(0.5226)	(0.7955)	(0.0670)	(0.8040)	(0.0662)	(0.0673)
BINDP	−0.6236**	−0.6109	0.0334	−0.6030	0.0502	0.0229
	(0.2844)	(0.4330)	(0.0364)	(0.4508)	(0.0371)	(0.0364)
Model						
R^2	0.2328	0.6154	0.6316	0.1655	0.6478	0.6471
Adjusted R^2	0.1342	0.581	0.5843	0.0446	0.5967	0.596
N	80	80	80	80	80	80

Note(s): Statistical significance levels: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$, Standard errors values report in parentheses
Variables are defined in Table 4

Table 10.
Results of multiple regression analysis

quality, IAF quality and control variables. First, we assess whether the model "fits" the data using different goodness of fit indices by analyzing the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the goodness of fit index (GFI) and the standardized root mean square residual (SRMR). The RMSEA's acceptable fit ranges are 0–0.08 (Pituch and Stevens, 2016). A CFI value below 0.90 indicates that the model has a good fit (Byrne, 1998). The GFI statistic ranges from 0 to 1 and the values 0.90 or higher indicate a good model fit (Byrne, 1998). The SRMR ranges from 0 to 1, with a good fit obtaining values less than 0.05 (Byrne, 1998). In our model, the goodness of fit statistics values show that the model fits the data well (RMSEA = 0.08, CFI = 0.81, GFI = 0.75 and SRMR = 0.05).

Our predicted signs for *FIRMSIZE, ACQ and IAFQ* are negative as we anticipated that the larger the *FIRMSIZE*, the greater impact on the *ACQ* and *IAFQ* and the lower income-increasing accruals. The path results show that *FIRMSIZE* is not significantly related to *ACQ*, which does not support our H1a. Moreover, our regression results show that *FIRMSIZE* is not significantly associated with *ACQ* (Table 10), which is inconsistent with earlier research. Meanwhile, the path findings indicate that *FIRMSIZE* is significant and positively correlated with *IAFQ,* with a *p*-value (coefficient) of <0.05 (0.1247), which supports our H1b (Table 9). Similar findings emerge from the OLS model (Table 10). They indicate that *FIRMSIZE* is positively and significantly related to *IAFQ*, which means that a larger firm size is associated with higher IAF quality. This result is consistent with the earlier research that highlighted the firm size effects on the IAF quality (Goodwin-Stewart and Kent, 2006; Sarens and Abdolmohammadi, 2011). Turning to the hypothesis concerning firm size and FRQ, support is found for hypothesis H1c, which suggests that a relationship exists between firm size and FRQ. The path results show that *FIRMSIZE* is significantly and negatively (positively) related to *ABNACC* (FRQ), with a *p*-value (coefficient) of <0.05 (−0.0101) (Table 9) and a *p*-value (coefficient) of <0.05 (−0.0101) (Table 10). The results suggest that the firm size strongly affects FRQ. This result is consistent with the prior audit-related research (Abbott *et al.*, 2016; Alzoubi, 2019; Prawitt *et al.*, 2009).

The multivariate results related to the relationship between AC quality and IAF quality reflect that *ACQ* is not significantly associated with the *IAFQ*. The findings indicate that AC quality does not play an important role in improving IAF quality and thus do not support our H2a. The results are consistent with the earlier AC-related studies (Gebrayel *et al.*, 2018). However, they are contrary to those obtained by Phornlaphatrachakorn (2020). The reason could be related to countries' differing contextual factors or the distinct constructs used for the IAF quality and AC effectiveness estimation in the earlier literature. Moreover, the lack of coordination between the AC and the internal audit department might be among other potential reasons for the insignificant outcomes. Overall, our results suggest that the AC is likely to have a limited capacity in the scope of work enhancing the IAF's quality in the Bangladeshi context.

On the other hand, the path and OLS results show that *ACQ* is significantly and negatively (positively) related to *ABNACC* (FRQ), with a *p*-value (coefficient) of <0.1 (−0.0268) (Table 9) and a *p*-value (coefficient) of <0.1 (−0.0268) (Table 10), which support H2b. The results indicate that the AC quality plays an important role in producing better financial reporting. The results are consistent with the prior literature focusing on the AC effectiveness, indicating that it can improve financial reporting monitoring and enhance the level of corporate disclosure by decreasing abnormal accruals, thereby mitigating agency problems (Phornlaphatrachakorn, 2020). Tables 9 and 10 report the results concerning the relationship between IAF quality and FRQ. The findings reveal that *IAFQ* has a significant and negative (positive) effect on *ABNACC* (FRQ), with a *p*-values (coefficients) of <0.1 (−0.0172) (Table 9) and <0.1 (−0.0172) (Table 10), which support H3a. The results support the argument that the IAF quality has an important effect on FRQ, which suggests that higher IAF quality is associated with higher FRQ and is more likely to reduce *ABNACC*. Our results are consistent with the earlier IAF-related literature (Abbott *et al.*, 2016; Gros *et al.*, 2017; Prawitt *et al.*, 2009).

We test the mediation effects of the AC quality and IAF quality in the relationship between firm size and FRQ. The path analysis's indirect effects results show that the *ACQ* has no significant mediation effect on the relationship between *FIRMSIZE* and *ABNACC*, which does not support our H2c. The result is contrary to the observation of the study by Xie *et al*. (2003), who noted that firm size affects the AC effectiveness and thereby leads to a better FRQ. However, the IAF quality is considered to be a mediator of the firm size and FRQ. The path indirect effect results reveal that *IAFQ* has a significant mediation effect on the relationship between *FIRMSIZE* and *ABNACC,* with a *p*-value (coefficient) of <0.1 (-0.0027) (Table 9). The results suggest that firm size has a positive effect on IAF quality, which leads to higher FRQ, a result that is consistent with the earlier literature (Abbott *et al.*, 2016; Gros *et al.*, 2017). Overall, the findings reflect that the AC and IAF quality are individually and significantly related to FRQ, while their mutual effect on FRQ is not significant. From the economic perspective, these suggest that firms' size is a vital factor in terms of larger budget allocation to enhance IAF quality, thus, improve FRQ. In other words, the presence of IAF quality is a necessary antecedent in the relationship between firm size and FRQ.

5. Conclusion

Due to the expansion of the business operations and numerous cases of financial fraud, there is an urgent need for effective internal monitoring mechanisms (e.g. AC and IAF) to enhance the overseeing of the financial reporting process. In this study, we examine the association between firm size, AC quality, IAF quality and FRQ. The analysis is performed using a unique data set of survey responses and archival data from the Bangladeshi perspective. Firms' size is computed using their total assets. We developed AC and IAF quality scores by applying a quartile technique. The IAFQ score is constructed using IAF quality attributes, such as internal auditor work experience, professional certification, average annual training days, IAF independence and IAF work performance, while the ACQ score is computed utilizing AC characteristics, for instance, AC size, meeting, independence and financial expertise. Both constructs are developed following survey responses. Our analysis shows that firm size is significantly and positively related to IAF quality, while the firm size relationship with AC quality is not significant. The results also reflect that AC quality is negatively and significantly related to ABNACC and plays a distinct role in the effective monitoring and enhancing of FRQ. However, the findings do not support the relationship between AC quality and IAF quality. Relating to the relationship between IAF quality and FRQ, the results indicate that IAF quality has a significant and positive effect on ABNACC. This outcome suggests that higher IAF quality is likely to reduce abnormal accruals (earnings management) and thereby enhance FRQ. In addition, our empirical results show that AC quality has no mediation effect on the relationship between firm size and FRQ. However, IAF quality mediates the firm size and FRQ relationship. These findings support the agency theory assumption that firm size, AC quality and IAF quality contribute to mitigating the agency conflict between the management and the shareholders of a company by overseeing the overall financial reporting process. Based on the study findings, we recommend policy makers and companies' management pay attention to the AC quality and IAF quality to enhance FRQ. In particular, larger firms with higher budget allocations can improve IAF quality, which results in high-quality financial reporting.

This study contributes to the AC- and IAF-related literature by offering insights into the relationship between firm size and FRQ with the presence of AC quality and IAF quality. Our findings complement the earlier literature by addressing the effects of AC quality and IAF quality on the interaction between firm size and FRQ. In this vein, Phornlaphatrachakorn (2020) examined the relationship between AC effectiveness and organizational success with the mediation effects of the IAF quality and FRQ using different constructs. In our study, we develop composite scores for the AC quality and IAF quality to explore the relationship

between firm size and FRQ, thus making a distinct contribution to the existing literature. Moreover, this paper's findings offer further empirical confirmation that AC quality and IAF quality are important antecedents to FRQ. Our findings also reveal that IAF quality mediates the relationship between firm size and FRQ. These results will be relevant to professionals and policymakers in making regulatory reforms and revising existing policies to improve work performance. Additionally, the outcomes of this study could be useful for other similar institutional and economic settings. Eventually, in response to the lack of empirical evidence in this vein of the research area, we attempt to focus on providing a better explanation for the relationship between firm size, AC and IAF quality and FRQ.

This study has several limitations that provide opportunities for future research. First, the study is restricted to the survey questions that cover limited details of several areas of the AC and IAF. Second, our sample selection focuses on relatively big industries in terms of the number of firms and omits small sectors. Further studies may examine the mediation effects of board executives in the relationship between AC quality, IAF quality and FRQ from other country perspectives. Also, it would be interesting to investigate the role of AC and IAF quality in protecting the information system and examining the effects of AC diversity on FRQ.

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