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Article

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

COVID-19 Pandemic, Internal Audit Function and Audit Report Lag: Evidence from Emerging economy

Anas Rasheed Bajary^{1*}, Rohami Shafie¹ and Azharudin Ali²

Abstract: With the spread of the COVID-19 pandemic, the accounting and auditing profession has been exposed to additional risks, challenges, and serious threats that affect audit quality; audit timeliness. Therefore, this study examines the effect of COVID-19 on audit reporting lag (ARL). In addition, this study investigates whether the internal corporate monitoring mechanisms contribute to mitigating the effect of the global health crisis; consequently, the study employs the internal audit function (IAF) cost as a moderator on the relationship between COVID-19 and ARL. To accomplish the objectives of our study, a sample of 1,352 firm-year observations from Malaysian listed firms was employed during the period 2017–2020, and feasible generalized least square (FGLS) regression was used. The findings indicate that auditors take longer to complete audit tasks and produce audit reports during COVID-19 than before. However, that period is obviously reduced with firms investing higher in their IAF. Furthermore, the findings obtained from the additional analyses and endogeneity tests support the main regression findings, thereby revealing that the findings are robust. The study's findings are among the earliest empirical evidence of the effect of COVID-19 on the ARL.

Subjects: Accounting; Risk Management; Corporate Governance

Keywords: COVID-19; audit report lag; internal audit function; emerging economy; Malaysia

1. Introduction

At the end of 2019, the Chinese government informed the World Health Organization (WHO) about the occurrence of numerous cases of an atypical kind of pneumonia in Wuhan, China. On 11 March 2020, WHO formally announced that the coronavirus diseases 2019 (COVID-19) outbreak had turned into a global pandemic (Cucinotta & Vanelli, 2020). Thus, worldwide governments have battled COVID-19 by implementing stringent measures to mitigate its adverse consequences. For example, Ashraf (2020) reports that, during this period, authorities have forced full or partial lockdowns, banned internal and external flights, and suspended national events. As a result, the worldwide economies have been severely affected (Al-Qadasi et al., 2022; Hazaea et al., 2022; Elmagrhi & Ntim, 2022; Badawy, 2021; Chang et al., 2021; Bin-Nashwan et al., 2020), whereby economic activities declined, including the production and trade as a consequence of these procedures.

The spread of the pandemic is mostly accompanied by additional risks and challenges in accounting and auditing work (Accountancy Europe, 2020a; Securities Commission Malaysia [SCM], 2020), such as cash flow risks (Deloitte, 2020b), the potentiality of occurrence of fraud (PwC, 2020a) and insufficient audit evidence (Accountancy Europe, 2020a). Since the auditors are considered watchdogs and substantial oversight mechanisms in the corporate governance framework, they exert further audit efforts and perform additional examinations, responding to the business risks (Al-Qadasi et al., 2022; Cao et al., 2020). Likewise, Hategan et al. (2022) indicated that the Association of Chartered Accounting (ACCA) introduced suggestions to auditors to carry out supplemental audit measures contributing to assessing the generated events due to COVID-19 implications. Accordingly, the auditors will be necessitated to consume much time to perform all these procedures; such time is called audit report lag (ARL).

Under crises such as COVID-19, audited information is in more demand than ever before, as the users of the financial statements suspect that management hides poor performance (Badawy, 2021). Such information is under the auditors' responsibility to be provided. Hence, auditors need to be aware of the changes in the business environment and consider exploring more in-depth the definite audit issues it represents (Accountancy Europe, 2020a), which would affect audit outcomes. In their study, Al-Qadasi et al. (2022) stated that several threats that have resulted from COVID-19 would increase and intensify auditors' work, namely audit risk, client complexity, and legal liability. First, revising risk assessment has become an urgent necessity for auditors in light of the recent critical threats yielded by the pandemic. Second, a need arises to alter the strategy of collecting sufficient and proper audit evidence by auditors, particularly in light of the constraints on physical meetings. Despite the fact that technology has become the appropriate solution to perform audit tasks and hold online meetings, Appelbaum et al. (2020) stress that various issues emerged due to remotizing audit tasks. Finally, due to the emerging risks of COVID-19, it is expected that legal liability on auditors could be higher than at any other time because of the chance of errors and fraud to happen in financial reports and the probability of auditors' failure to catch material misstatements. Due to these circumstances, audit firms will be more careful and stricter in conducting audits, thus increasing the audit scope and time allocated to their work.

ARL is the time the auditors take to scrutinize the financial statements. Based on the previous literature, it can be identified by calculating the days elapsed from the accounting period end to the date the independent auditor's report is released (Baatwah et al., 2022; Syofyan et al., 2021; Al-Ebel et al., 2020; Al-Qublani et al., 2020; Habib & Huang, 2019; Sakka & Jarboui, 2016; Mohamad-Nor et al., 2010; Bamber et al., 1993). The importance of ARL stems from the implications that result from the delay of audit reports. Habib (2014) documents that the ARL is an essential element of audit outcomes, and a short ARL reflects audit efficiency. Moreover, it is asserted that a timely audit report increases information symmetry (Billings et al., 2020; Owusu-Ansah & Leventis, 2006), minimizes information leakage and rumors (Owusu-Ansah, 2000), and enhances general reporting quality (Sultana et al., 2014). In contrast, delayed audit reports weaken financial information quality (Knechel & Payne, 2001), postpone financial statements publication (Bamber et al., 1993), reduce investors' confidence (Ettredge et al., 2006), and signal bad news in the market (Chambers & Penman, 1984).

In view of the restrictions forced due to the pandemic, the international stock exchanges have taken various procedures; financial reports' timeliness is no exception. For example, SCM has granted from one to two months extension for issuing financial reports, including audited financial statements and auditor reports, which are due by December 31, 31 January 2019, 2020, and 31 March 2020 (Rabi, 2020), as well as 2021, where a one-month extension for the release of audited financial reports is due by 31 March 2021, and June 31, 2021 (SCM, 2021). Despite the extension that SCM granted to listed companies, some of them breached paragraph 9.23, which stipulates publishing annual reports (including audited financial statements and auditor and director reports) within four months. For instance, SCM suspended the trading stock of Sarawak

Consolidation Industries Berhad due to the failure to produce audited financial statements in a timely manner because of the Repercussions of COVID-19 (Mung, 2021).

Furthermore, Šušak (2020) indicated that many companies decided to benefit from the deadline changes during COVID-19. In that sense, he alluded to a potential problem that could be created due to the financial reporting flexibility guaranteed by accounting standards where it might be opportunistically exploited. Specifically, Šušak (2020) stressed that the reporting lag is attributable to opportunistic activities (e.g., earning management practices). In this regard, auditors intensify their efforts and diagnostic tests to produce trustful reports, but late. As mentioned, these actions directly affect financial reporting timeliness, including ARL, which the current study addresses. Theoretically, although the literature has documented the effect of COVID-19 on the audit function (e.g., Al-Qadasi et al., 2022; Hay et al., 2021; Hazaea et al., 2022; Kend & Nguyen, 2022), there is very limited knowledge about the effect of this pandemic on audit timeliness. Thus, our study bridges this gap by examining the effect of COVID-19 on ARL.

According to Deloitte (2020a), the internal audit function (IAF) plays a critical role in handling the initial effect of COVID-19. Since the financial scandals at the end of the past century, the IAF has drawn extensive attention from many stakeholders who are aware that it is pivotal to improve audit efficiency (e.g., ARL). Importantly, the upper-echelon managers of the organizations take the role of the IAF into their consideration when making a decision, as the IAF provides advice, assurance, and guidance (PwC, 2020b). In addition, the IAF critically impacts audit reporting (Wan-Hussin & Bamahros, 2013), as external auditors mainly depend on its work (Abbott et al., 2012). Specifically, during the COVID-19 outbreak, extra risks and challenges have faced IAF (KPMG, 2020b). As organizations adjust to dealing with the first impact of COVID-19, IAF essentially continues to provide vital assurance, advising management and the board on the altering risk, controlling landscape, and assisting and anticipating arising jeopardies (Deloitte, 2020a). Moreover, as the business environment radically changed, IAF has become increasingly substantial within companies (Savčuk, 2007). He affirms that internal audit turned from a control function (inspecting financial and accounting data) to a strategic partner for shareholders and management to improve the governance process over the past sixty year.

The efficient IAF will contribute to overcoming such obstacles and difficulties that would lead to easing independent auditors' work, thereby shortening audit lag. In their study, Baatwah, Al-Ebel et al. (2019) emphasize that IAF significantly promotes audit efficiency by reducing ARL, mainly if provided by Big 4 auditors. In another study, Wan-Hussin and Bamahros (2013) indicate that the higher the investment in IAF, the lower the audit delay. This suggests that when IAF has a big budget, the internal audit department will be able to attract more qualified members to its team and perform further checking assignments that will lead to minimizing threats in day-to-day operations, thereby resulting in assisting external auditors in conducting their tasks smoothly with no delay. Besides, Abbott et al. (2012) demonstrate that the help rendered by IAF departments to external auditors substantially accelerates the publishing of audit reports to the public. Thus, the interaction between IAF and external audit function extensively declines ARL. In view of the emerging risks from COVID-19 over the firms' activities, the study expects that IAF significantly alleviates adverse implications. Consequently, internal auditors will help reduce external auditors' work during the COVID-19 outbreak. Therefore, it is anticipated that the IAF [proxied by IAF cost (IAFC)] plays a moderating role in the relationship between COVID-19 and ARL.

Several reasons motivate the present study to examine the effect of COVID-19 on ARL. First, a need arises to reveal the effect of COVID-19 on financial and auditing reporting. At the same time, very limited studies have empirically highlighted the pandemic's influence on audit outcomes. This study, thus, adds value to audit timeliness literature by filling this void by examining whether this health crisis correlates with longer audit delays. Finally, as a means of corporate governance, the study highlights the IAF's fundamental role in attenuating the adverse effect of

the COVID-19 outbreak. This relevance stems from its critical services in providing assurance, estimating arising risks, and advising management and the board of the firm (Deloitte, 2020a).

To achieve the research objectives, 1,352 observations have been obtained from the Malaysian context to investigate the association between COVID-19 and ARL and the moderating role of IAF cost in this relationship. The findings revealed a statistically positive correlation between COVID-19 and ARL, reflecting the magnitude of the challenges and risks resulting from the pandemic outbreak as auditors took more time to perform additional procedures to overcome them. However, when the relationship is moderated by IAF cost (IAFC), the negative influence of COVID-19 on audit delay has been alleviated, referring to the great efforts exerted by the firms' internal auditor to report and address threats and problems during the pandemic period.

The remaining sections of the paper are structured as follows. The subsequent section reviews previous studies and develops hypotheses. Next, the research demonstrates the methodology. The fourth section discusses the empirical findings of the study. The fifth section is for demonstrating the additional analyses. The final section is the conclusion of the research and provides recommendations for future research.

2. Literature review and hypotheses development

2.1. COVID-19

As the pandemic suddenly emerged and spread, several concerned parties sought to diagnose and analyze the consequences of this crisis. Specifically, academicians have carried out different studies to illustrate the dimensions of the COVID-19 outbreak. Based on China's capital market, Al-Awadhi et al. (2020) examined the influence of day-to-day confirmed and death cases on stock returns from January 10 to March 16, 2020, including all listed firms. They found that the number of these cases negatively affects stock returns. Using data from 64 countries during the period from January 22-April 17, 2020, Ashraf (2020) revealed that the stock returns decrease as the confirmed cases increased and the stock market reacts proactively more to the growing number of confirmed cases than death cases. Others have examined whether the stock exchanges react to coronavirus. For instance, Ali et al. (2020) stated that at the time that the Chinese market tended to stabilize, the global capital markets, such as the United States (US) and European Union (EU) markets, had a downward phase. Further, Zaremba et al. (2020) raised a question related to the ability of governments to restrain the effect of COVID-19 on stock exchange fluctuation. To respond to such a question, they utilized data from 67 countries around the world. The findings indicated a positive correlation between non-pharmaceutical interventions and equities market fluctuation. However, they also found that this relationship is not relevant to the role of COVID-19.

The impact of COVID-19 is not only limited to the financial markets and their reactions but also to the financial and audit reporting. In this regard, by manipulating earnings management, Lassoued and Khanchel (2021) investigated whether financial reporting is affected by the COVID-19 outbreak. The findings concluded that firms have an increasing propensity to be more involved in earning management during the COVID-19 period compared to the previous period, thus reflecting the low financial reporting quality over the pandemic time. Regarding the COVID-19 effect on audit function, Hazaea et al. (2022) distributed 55 questionnaires and conducted 11 interviews to investigate the outbreak's impact on audit quality in Saudi Arabia and Yemen. They reported that audit services compensation is statistically influenced by the COVID-19 pandemic, particularly when considering family-owned entities and the absence of legislation that organize auditing compensations in crises. Besides, in this circumstance, they showed that the audit procedures are no longer adequate to get the appropriate evidence and data that are required for the audit process. Similarly, Al-Qadasi et al. (2022) used COVID-19 as a dummy variable for firms with a fiscal year ending on or after December 31, 2019, to examine how audit fees are affected by COVID-19. Based on 268 observations from the Omani setting, the findings demonstrated that firms have increased the demand for audit quality, which is clear from increasing audit

fees during the coronavirus outbreak. This reflects the risks, complexities, and legal liabilities yielded by COVID-19 occurrence, where auditors exert additional effort. Blankley et al. (2014) point out that the additional auditors' effort does not necessarily result in a high level of audit quality; it may denote a high-risk profile that usually causes long audit delays.

As discussed above, the provided evidence in the literature has illustrated the adverse effects of pandemic on the economy and capital markets. These adverse effects extend, in turn, to influence the financial and auditing process of firms (Accountancy Europe, 2020b). Diab (2021) documented that COVID-19 considerably impacts the audit process, including the appearance of unknown fraud jeopardies and occurring shifts in risk evaluation and accounting estimations, and requires revising the earlier audit plans. In addition, it is reported that audit system weakness, governance absence, failure to apply international standards, and inadequate evidence are factors that deteriorate audit quality during the COVID-19 period (Hazaea et al., 2022). All these reflect on the auditors' work, where they have to take a step back and look deeper to reply to auditing problems that emerged in firms' reporting due to COVID-19 (Accountancy Europe, 2020b), which might prolong the time auditors take to complete the audits. Although COVID-19 has an influence on financial and auditing reporting, the study observed that there is a scarcity of empirical studies that investigated the association between COVID-19 and ARL. Therefore, the study develops the hypothesis as follows:

H1: COVID-19 is positively and significantly associated with audit report lag.

2.2. Internal audit function

The IAF is essential inner corporate governance means as it delivers assurance on the internal control efficacy and risk management control systems so as to cut down interior and exterior agency costs (Ismael & Roberts, 2018). Critical times, such as COVID-19, bring new threats to firms, whereas IAF plays a substantial role in mitigating their adverse effects. KPMG (2020a) states that in difficult times the IAF can help management and the board by providing assurance and advice. Previous studies have demonstrated the relevance of this role in optimizing financial and auditing quality. Abbott et al. (2012), when investigating the association between IAF assistance and ARL, argue that when preparing and performing audits, professional standards encourage independent auditors to take the work of internal auditors of the client into their account and rely on the help rendered by IAF. As predicted, they provided evidence on the importance of IAF assistance in reducing ARL, suggesting saving costs and improving audit effectiveness. This is relevant to difficulties faced by an auditor in the form of more audit requirements and fast regulatory submission. In their study, Pizzini et al. (2015) point out that increasing IAF quality leads to providing audit reports at the right time.

Specifically, the cost is one of the fundamental traits of IAF that consists of team salaries, overhead costs, training, and outsourcing services providers (SCM, 2017). Wan-Hussin and Bamahros (2013) debate that the fund allocated to IAF is essential to enable IAF to provide efficient oversight and support to the audit committee. They found that investing in IAF has an important impact on decreasing audit delay. According to Prawitt et al. (2009), a relatively well-funded IAF should have better monitoring capabilities to identify and prevent material misstatements since the increased funding enables the IAF to recruit and retain more qualified staff. They revealed that the quality of IAF enhances the financial and audit reporting quality by reducing the earning management. In the Malaysian context, AL-Qadasi et al. (2019) showed that the increased investment in IAF increases the probability of contracting with a specialist external auditor for family-owned firms as well as paying higher audit fees for family and non-family-owned firms. The findings indicate that Malaysian family-owned firms have more potential for recruiting industry expert auditors, whereas both family and non-family-owned firms increasingly invest in internal and external audit functions. Furthermore, Baatwah and Al-Qadasi (2019) suggest that as the

nature of business of large companies is characterized as complex and riskier, they invest more resources in IAF by recruiting more skilled personnel. It is also debated that business complexity increases the IAF budget (Carcello et al., 2005), and increasing IAF investment is more likely to associate with high-level quality of IAF (Prawitt et al., 2009) and short ARL (Wan-Hussin & Bamahros, 2013).

In short, it is clear that effective IAF is a cornerstone of the auditing process as it helps the upper-echelon managers of the company by introducing advice, assessing, identifying, and prioritizing the risks and weaknesses in the internal control system, specifically during the health crisis that influenced the global economy at the end of 2019. Consistently, the outside corporate mechanisms (auditors) increasingly depend on the work of the internal auditors that facilitates their work and then enables them to speedily complete audits. According to the Public Company Accounting Oversight Board Auditing (PCAOB), Standard No. 5 (AS5) recommends independent auditors count on IAF based on certain criteria (Public Company Accounting Oversight Board [PCAOB], 2007). Thus, following the study of See, et al. (2020) that utilized IAFC as a moderator, this study also utilized it to moderate the relationship between COVID-19 and ARL. The reason for moderating IAFC is to increase the efficiency of the audit quality (See, et al., 2020), especially during the period of the COVID-19 outbreak. Therefore, in light of the preceding debate, our second hypothesis can be stated as follows:

H2: The higher cost of the internal audit function weakens the significant and positive relationship between COVID-19 and audit report lag.

3. Research methodology

3.1. Data and sample

The sample comprises the traded firms on the Main Board of Bursa Malaysia during the period from 2017 to 2020. The sample period began in 2017 because it was the year of issuing the third edition of the revised Malaysian Code of Corporate Governance (MCCG), whereas the last year was 2020, the year before issuing the fourth edition of MCCG in 2021. The financial data were collected from the DataStream database, whereas other data were manually collected from the firms' annual reports. All annual report was downloaded from the Bursa Malaysia website. The final sample consisted of 1,352 firm-year observations after excluding the missing data and delisting firms. Besides, the financial firms were excluded because they are subject to a different regulatory environment compared to their counterparts and have unique attributes.

3.2. Model specification

The current study applied the quantitative approach using secondary data sources. Despite several studies employed the ordinary least square (OLS) estimator in ARL literature (e.g., Al-Ebel et al., 2020; Al-Mulla & Bradbury, 2020; Cohen & Leventis, 2013; Habib & Muhammadi, 2018; Stewart & Cairney, 2019); earlier literature argued that the feasible generalized least square (FGLS) estimator is more efficient than other estimators to correct the autocorrelation and heteroskedasticity problem (AL-Duais et al., 2022; Ghaleb et al., 2020, 2021; Wooldridge, 2010). Thus, the current study employs FGLS to get valid and robust results. The hypotheses of this study were examined using the following models of the association between COVID-19 and ARL with moderating IAFC role:

$$\begin{aligned} \text{ARL} = & \beta_0 + \beta_1 \text{COVID} - 19_{it} + \beta_2 \text{LnIAFC}_{it} + \beta_3 \text{COVID} - 19^* \text{LnIAFC}_{it} \\ & + \beta_4 \text{ACSIZE}_{it} + \beta_5 \text{ACMEET}_{it} + \beta_6 \text{BDSIZE}_{it} + \beta_7 \text{BDMEET}_{it} + \beta_8 \text{IAFSOUR}_{it} \\ & + \beta_9 \text{BIG4}_{it} + \beta_{10} \text{LnAFEE} + \beta_{11} \text{LnNAFEE} + \beta_{12} \text{LnCSIZE} + \beta_{13} \text{LOSS}_{it} \\ & + \beta_{14} \text{LEV}_{it} + \beta_{15} \text{YEAR}_{it} + \beta_{16} \text{INDUS}_{it} + \varepsilon_i \end{aligned}$$

This model investigates the relationship between COVID-19 and ARL. The model also shows the interaction between COVID-19 and IAFC on ARL. It is a well-established model developed in

Table 1. Variable definition

Variable	Description	Source
ARL	Number of days between year-end date to auditor report date	(Baatwah et al., 2022; Al-Ebel et al., 2020)
COVID-19	Dummy variable, 1 if the fiscal year ended on or after 31/12/2019; 0 otherwise.	(Al-Qadasi et al., 2022)
LnIAFC	Natural log of investment (cost) in the internal audit function	(Wan-Hussin & Bamahros, 2013)
ACSIZE	Total number of audit committee members	(Ghaleb et al., 2021)
ACMEET	Frequent audit committee meetings	(Ghaleb et al., 2021)
BDSIZE	Number of members of board of directors	(Mohamad-Nor et al., 2010); (Qaderi et al., 2022)
BDMEET	Frequent meetings of board of directors	(Hashim & Abdul-Rahman, 2010)
IAFSOUR	1 if IAF in-house; 0 otherwise	(Wan-Hussin & Bamahros, 2013)
BIG4	1 if auditor is PricewaterhouseCoopers, Ernst and Young, KPMG, or Deloitte, 0 otherwise	(Mohamad-Nor et al., 2010)
AFEE	Natural log of audit fees	(Al-Qadasi et al., 2022)
LnNAFEE	Natural log of non-audit fees	(Baatwah & Al-Qadasi, 2019)
LnCSIZE	Natural log of total assets	(Mohamad-Nor et al., 2010)
LOSS	1 if the firm reported negative income, 0 otherwise	(Baatwah & Al-Qadasi, 2019)
LEV	Leverage is total debt to total assets	(Al-Qadasi et al., 2019)
YEAR	Years 2017–2020	(Al-Qadasi et al., 2019)
INDUS	Industry dummies	(Altarawneh et al., 2022; Al-Qadasi et al., 2019)

accordance with previous studies (Al-Qadasi et al., 2022; Baatwah et al., 2022; Baatwah & Al-Qadasi, 2019; Bamber et al., 1993; Bhuiyan & D’Costa, 2020; Newton & Ashton, 1989; Wan-Hussin & Bamahros, 2013; Wan Hussin et al., 2018). The definitions of all model variables are listed in Table 1.

4. Empirical findings

4.1. Descriptive statistics

Table 2 exhibits the descriptive statistics of the sample. Regarding the dependent variable, the mean of ARL is 99.811 (100) days, suggesting that the auditors take 100 days on average to complete their work and publish the audit report. This mean is the same as Mohamad-Nor et al.’s (2010) study that reported 100 days. Overall, the min ARL is 11 days, whereas the max is 181 days for Green Packet Berhad, which is higher than the legal submission timeframe for filing financial statements on Bursa Malaysia because of the effect of the COVID-19 pandemic. Regarding COVID-19, on average, 0.398 (40) per cent (538 observations) were affected by the pandemic; otherwise (814 observations) were not. This is less than 46 percent of Al-Qadasi et al.’s (2022) study based on the Omani context. As for the natural log of IAF, the mean is 4.946, slightly higher than the 4.43 reported by Wan Hussin et al. (2018).

In terms of control variables, AC size consists of 3 members on average, as it is in parallel with earlier studies (e.g., Baatwah & Al-Qadasi, 2019; Wan-Hussin & Bamahros, 2013). The average AC

Table 2. Descriptive statistics

Variable	Mean	SD	Median	Min	Max
ARL	99.811	25.601	100	11	181
COVID-19	.398	.49	0	0	1
LnIAFC	4.946	1.691	4.468	0	9.863
ACSIZE	3.344	.611	3	3	7
ACMEET	5.118	1.239	5	3	18
BDSIZE	7.584	1.901	7	4	15
BDMEET	5.656	2.285	5	3	25
IAFSOUR	.441	.497	0	0	1
BIG4	.47	.499	0	0	1
LnAFEE	5.720	1.012	5.521	2.425	9.976
LnNAFEE	3.487	1.849	3.519	0	9.685
LnCSIZE	13.585	1.533	13.390	6.073	19.016
LOSS	.175	.38	0	0	1
LEV	.195	.161	.1693	0	.894

meeting is 5, which is similar to AL-Duais et al. (2021) and Al-Qublani et al. (2020). Moreover, the study controls board attributes; the mean value of board size is 7.584 (8) directors, which is the same average as Mohamad-Nor et al. (2010) reported, whereas the frequency of meetings held by the board, on average, is 5.656 a year, slightly higher than Hashim and Abdul-Rahman's (2012) average with 5 times a year. Besides, 44 per cent of firms employ in-house IAF, while Wan Hussin et al. (2018) recorded less percentage of 39 per cent. Furthermore, our study showed that 47 per cent of firms contract with Big4 firms to audit their financial statements, thereby indicating that more than 50 per cent of Malaysian listed-firms hire non-Big4 auditors. With respect charged amount to external auditors, audit and non-audit fees are computed by natural log, with mean of 5.720 and 3.487, respectively. They are relatively higher than 5.18 and 2.81 compared with Wan Hussin et al.'s (2018) study. The natural log of total assets represents the firm size (LnCSIZE), which has a mean of 13.585; this is in parallel with the result of Al-Qublani et al. (2020). Nearly 18 percent of firms reported a loss. Comparatively, it is less than 26 per cent and 22 per cent to Wan Hussin et al. (2018) and Wan-Hussin and Bamahros (2013), respectively. This reflects the improvement in firms' financial performance. Finally, in line with the findings of Al-Qublani et al. (2020), the current study documented a leverage mean of 0.195.

Table 3 shows the Pearson correlation matrix. As presented, a positive and significant association exists between COVID-19 and ARL at 1 percent. In addition, the findings show that LnIAFC is significantly correlated with ARL, but in a negative direction. The correlation matrix displays high correlations between LnNAFEE and LnIAFC (cor. Coef = 0.554), between BMEET and ACMEET (cor. Coef = 0.565), between LnCSIZE and LnIAFC (cor. Coef = 0.578), between LnCSIZE and LnAFEE (cor. Coef = 0.590), and between LnNAFEE and LnAFEE (cor. Coef = 0.622). However, the highest correlations are between IAFSOUR and LnIAFC (cor. Coef = 0.716) and between LnAFEE and LnIAFC (cor. Coef = 0.765). Overall, Table 3 shows no existence of serious correlation issues among the variables. In their study, Gujarati and Porter (2009) state that the correlation problem is absent if all matrix values are not more than (0.80). Moreover, they recommend that the variance inflation factor (VIF) is less than 10, which is consistent with our results, thus indicating no serious multicollinearity issue.

4.2. Regression findings

Table 4 exhibits the results based on the FGLS regression for two research models. The results indicate that both models fit at a significance level of 1 percent with (Prob > chi2 = 0.0000), whereas Wald chi2 = 2493.47 and 2726.17 for model 1 and model 2, respectively. In Table 4, it is

Table 3. Matrix of Pearson correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) ARL	1.000													
(2) COVID-19	0.348***	1.000												
(3) LnIAFC	-0.302***	0.040	1.000											
(4) ACSIZE	-0.152***	0.059**	0.278***	1.000										
(5) ACMEET	0.004	-0.026	0.329***	0.142***	1.000									
(6) BDSIZE	-0.119***	0.018	0.372***	0.372***	0.208***	1.000								
(7) BDMEET	-0.026	0.057**	0.404***	0.140***	0.565***	0.222***	1.000							
(8) IAFSOUR	-0.214***	0.033	0.716***	0.190***	0.201***	0.225***	0.239***	1.000						
(9) BIG4	-0.170***	0.024	0.491***	0.139***	0.134***	0.177***	0.218***	0.426***	1.000					
(10) LnAFEE	-0.169***	0.052*	0.765***	0.150***	0.337***	0.267***	0.417***	0.489***	0.483***	1.000				
(11) LnNAFEE	-0.140***	0.002	0.554***	0.151***	0.272***	0.197***	0.334**	0.336***	0.440***	0.622***	1.000			
(12) LnCSIZE	-0.198***	0.032	0.578***	0.143***	0.244***	0.276***	0.288***	0.382***	0.326***	0.590***	0.403***	1.000		
(13) LOSS	0.097***	-0.144***	-0.027	-0.059**	0.065**	-0.101***	0.035	0.022	-0.002	0.014	-0.015	-0.118***	1.000	
(14) LEV	0.015	0.059**	0.228**	0.012	0.114***	0.089***	0.148***	0.162***	0.159***	0.302***	0.161***	0.412***	0.084***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4. FGLS regression analysis of ARL

Variables	Model 1	Model 2
ARL	Coef.	Coef
COVID-19	35.042***	40.778***
LnIAFC		-4.275***
COVID-19*LnIAFC		-1.241***
ACSIZE	-2.872***	-2.093***
ACMEET	0.419	0.664
BDSIZE	-0.222	0.226
BDMEET	1.1***	1.231***
IAFSOUR	-6.527***	-1.106
BIG4	-0.515	0.339
LnAFEE	-2.886***	0.506
LnNAFEE	0.301	0.502**
LnCSIZE	-.887***	-0.518**
LOSS	-0.305	-0.118
LEV	7.343***	7.521***
Constant	125.89	110.906
Year Effect	Include	Include
Industry Effect	Include	Include
Wald chi ²	2493.47	2726.17
Prob > chi ²	0.0000	0.0000

Note(s): ***p < .01, **p < .05, *p < .1.

clear that model 1 (columns 2) shows that the *COVID-19* coefficient is significantly and positively correlated with ARL (coef = 35.042 and p-value = 0.000). The findings suggest that given the new and additional risks and difficulties resulting from COVID-19, such as decreased revenues and declining monetary policy interest rates (Crucean & Hategan, 2021), auditors respond to the effect of the health crisis by increasing the scope and examinations of audits in response to the probable audit threats and complexities. Accordingly, external auditors consume more time to complete their audit function because of such challenges, which leads to delays in the release of audit reports. Thus, the findings support *H1*. In respect of the control variable, the results show that *ACSIZE*, *IAFSOUR*, *LnAFEE*, and *LnCSIZE* are significantly associated with short ARL at a significance level of 1 percent.

At the same time, *BMEET* and *LEV* have a positive association with ARL at 1 percent. However, it was found that ARL is not significantly affected by *ACMEET*, *BFSIZE*, *BIG4*, *LnNAFEE*, and *LOSS*. Relating to model 2 in Table 4 (columns 3), the association between COVID-19 and ARL is not different from the result of model 1, which is significantly positive at a 1 percent level (Coef = 40.778, p-value = 0.000). In line with Wan-Hussin and Bamahros (2013), our study shows that *LnIAFC* statistically reduces ARL. As for *H2*, it was hypothesized that the interaction between *COVID-19* and *LnIAFC* would mitigate the adverse impact of the pandemic by enhancing audit timeliness. As expected, the results reveal that the correlation between *COVID-19 *LnIAFC* and ARL is negative at 1 per cent significance level (Coef = -1.241, p-value = 0.000). The results indicate that the IAF critically alleviates undesirable consequences of this pandemic by assisting the board and management in facing challenges in tough times (KPMG, 2020a), as well as the external auditors mainly rely on internal auditor output, especially in terms of preparing financial statements (Abbott et al., 2012). Thus, external auditors easily accomplish their function and rapidly release audit reports. Accordingly, *H2* is supported. In terms of the control variables of model 2, it

revealed a negative association with ARL at 1 per cent for *ACSIZE* and 0.05 per cent for *LnCSIZE*. By contrast, *BMEET* and *LEV* have a positive association with ARL at 1 percent while *LnNAFEE* at 0.05. Nonetheless, there is no evidence indicating the relationship between *ACMEET*, *BSIZE*, *IAFSOUR*, *BIG4*, *LnAFEE*, and *LOSS* with ARL.

5. Additional analyses

5.1. Alternative measurement of reporting timeliness

Earlier literature has reported different components of reporting timeliness, such as ARL and total report lag (TRL). Most previous studies relevant to financial reports' timeliness have focused on ARL (e.g., Baatwah et al., 2022; Bamber et al., 1993; Raweh et al., 2021; Wan-Hussin & Bamahros, 2013; Wan Hussin et al., 2018), but only very limited studies have explored the TRL (e.g., Al-Ajmi, 2008; Dyer & Mchugh, 1975). Moreover, as a result of the COVID-19 outbreak globally, the economies have faced new and additional challenges, particularly firms that were compelled to combat such unusual risks. Hence, the global stock exchanges took different actions to contain such risks and reduce their repercussions on financial reporting (e.g., Bursa Malaysia). Consequently, this study reveals a need to re-investigate the effect of the COVID-19 pandemic on another timeliness proxy, namely TRL to provide comprehensive insights from a different measure other than the ARL.

Depending on the TRL definition by Al-Ajmi (2008) and Dyer and Mchugh (1975), the current study identifies it as the elapsed days between the accounting year end and the date of filing the annual report to Bursa Malaysia. These dates are easily captured from the annual reports, DataStream, and the website of Bursa Malaysia. Table 5 shows the regression results of the relationship between COVID-19 and TRL as well as the moderating role of *LnIAFC* on that relationship. Table 5 exposes that the results are consistent with the main result. Indeed, COVID-19 has a significant positive relationship with TRL, thereby indicating that the users of financial statements, especially investors, waited longer to obtain reliable financial information to make their investment decisions during the pandemic. Regarding the moderating role of *LnIAFC*, the result shows a significant negative coefficient for *COVID-19*LnIAFC*, thus providing evidence that *LnIAFC* weakens the relationship between *COVID-19* and *TRL*. As a result, the main findings are supported.

5.2. Endogeneity test

Previous accounting studies suggest that endogeneity may jeopardize the consistency and unbiased regression estimations (Dhaliwal et al., 2010; Krishnan et al., 2011). This issue could occur for a variety of reasons, including but not limited to the following: missing relevant variables, inaccurate measurements, biased samples, self-selection, etc. (Baltagi, 2005), whereby typically, in accounting literature, the issue stems from relationships between the independent variables and unobserved omitted variables (Brown et al., 2011). For robustness purposes, we utilized the lagged dependent variable to correct the endogeneity problem. This method is consistent with the method that was used by Ananzeh et al. (2021). As reported in Table 6 (column 2), the independent variable *COVID-19* is positively associated with longer *ARL*. In addition, the interaction relationship between *COVID-19* and *IAFC* (*COVID-19*LnIAFC*) has a significant negative association with audit delay. These findings conform to the results of the main analysis.

Using other model estimators may reduce the concern about endogeneity. In their study, Baatwah, Salleh, et al. (2019) emphasized that the utilization of a fixed effect approach alleviates the possibility of endogeneity problem presence. They attributed the reason to controlling for unobservable firm-specific effects as well as including a considerable number of control variables that affect the reporting timeliness. As illustrated in Table 7, the result of the two-way fixed-effect method precisely confirms the findings obtained from the main regression.

6. Conclusion, implications, and future directions

The spread of the COVID-19 pandemic at the end of 2019 has created various negative consequences that have severely influenced global economies and firms. The audit profession has

Table 5. FGLS regression analysis of TRL

Variables	Model 1	Model 2
TRL	Coef.	Coef.
COVID-19	37.644***	45.072***
LnIAFC		-1.203***
COVID-19*LnIAFC		-1.405***
ACSIZE	-1.98***	-1.865***
ACMEET	0.67**	0.736**
BDSIZE	0.126	0.302*
BDMEET	0.42**	0.556***
IAFSOUR	-2.778***	-0.588
BIG4	-0.896	-0.613
LnAFEE	-0.695	0.159
LnNAFEE	-0.073	0.004
LnCSIZE	-0.831***	-0.578**
LOSS	0.785	1.092*
LEV	5.55***	4.607***
Constant	133.126***	126.56***
Year Effect	<i>Include</i>	<i>Include</i>
Industry Effect	<i>Include</i>	<i>Include</i>
Wald chi ²	3134.99	3450.84
Prob > chi ²	0.0000	0.0000

Note(s): ***p < .01, **p < .05, *p < .1.

Table 6. Regression results of study model using DV lagged value

Variables	Model 1	Model 2
ARL	Coef.	Coef.
ARL _{t-1}	0.572***	0.558***
COVID-19	31.665***	41.298***
LnIAFC		-1.894**
COVID-19*LnIAFC		-1.895***
ACSIZE	-2.514**	-2.146**
ACMEET	1.597**	1.595**
BDSIZE	0.453	0.608*
BDMEET	0.516	0.792*
IAFSOUR	-3.079**	0.561
BIG4	-2.012	-1.752
LnAFEE	0.955	2.209**
LnNAFEE	0.419	0.512
LnCSIZE	-3.299***	-2.352***
LOSS	2.962	2.864
LEV	10.765***	9.991**
Constant	71.3***	56.182***
Year Effect	<i>Include</i>	<i>Include</i>
Industry Effect	<i>Include</i>	<i>Include</i>
R-squared	0.544	0.554
Prob > F	0.000	0.000

Note(s): ***p < .01, **p < .05, *p < .1.

Table 7. Two-way fixed-effect regression

	Model 1	Model 2
ARL	Coef.	Coef
COVID-19	32.33***	39.782***
LnIAFC		0.783
COVID-19*LnIAFC		-1.503***
ACSIZE	0.225	-0.008
ACMEET	-0.335	-0.437
BDSIZE	1.351***	1.348***
BDMEET	1.965***	2.039***
IAFSOUR	2.778	2.468
BIG4	7.482**	7.881***
LnAFEE	-1.475	-1.528
LnNAFEE	0.807	0.803
LnCSIZE	-0.613	-0.279
LOSS	-1.185	-1.069
LEV	5.71	6.306
Constant	79.457***	72.118***
Year Effect	<i>Include</i>	<i>Include</i>
Industry Effect	<i>Include</i>	<i>Include</i>
R-squared	0.509	0.514
Prob > F	0.000	0.000

Note(s): ***p < .01, **p < .05, *p < .1.

received a significant portion of that effect because auditors have countered new exceptional risks and difficulties which have not been experienced earlier. Therefore, those interested (e.g., investors, auditors, and academicians) have paid more attention to exploring the influence of the pandemic. Academically, although previous studies have provided different evidence on the impact of COVID-19 on the accounting and auditing field, scant studies have examined the effect on audit reporting timeliness. Therefore, This research provided evidence in this regard by examining the effect of COVID-19 on the ARL as well as studying the role of the internal corporate governance instruments, namely IAFC, which predicted weakens the positive relationship between COVID-19 pandemic and ARL. The results reported that the COVID-19 outbreak dramatically led to increasing audit delay, thus suggesting that threats created by the pandemic slowed down the external audit function process and postponed the audit report. Furthermore, it has been found that the moderating effect of IAFC reduces the adverse impact of COVID-19 by shortening the ARL. To provide more understanding of the pandemic's impact, the study performed several additional tests. Precisely, we documented that COVID-19 deteriorated the total financial reporting timeliness while the increased investment in IAF resulted in cutting that period. To control the endogeneity problem, we employed the lagged dependent variable and two-way fixed effects as the results supported the main regression results.

The result of this study adds several values. First, our results enrich the literature on timeliness by placing the COVID-19 crisis under microscope to understand how it affects the reporting process in the accounting and audit profession. Second, our results highlight the relevance of the increasing investment in the internal audit department essentially during the crisis period (COVID-19 duration) in addressing and overcoming the threats that fundamentally hinder the reporting process. Finally, the findings provide evidence to external auditors and firms that may be useful in dealing with similar situations in the future.

However, the current study's findings should be cautiously interpreted for several causes. Firstly, our study used a sample from listed firms from Malaysia, which is a developing country. Thus, the findings could not be generalizable to listed firms from developed countries (e.g., the United States and the United Kingdom). Secondly, the study used ARL as a proxy of financial reporting timeliness as well as TRL as an alternative measure; therefore, present study recommends using alternative measurements for financial reporting timeliness for future research, such as earnings announcement lag. Finally, although the study provided evidence on the effect of IAFC as an internal means of corporate governance that efficiently mitigated the pandemic's negative influence, other internal and external corporate governance mechanisms have not been examined. Thus, researchers should consider these limitations in their future studies.

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