

全球 COVID-19 危機對財務報導品質與審計品質 的影響：國際性綜述

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摘要：本文對近期探討全球 COVID-19 危機對財務報導與審計品質影響的新興文獻進行了全面綜述。本文聚焦自 2020 年以來的研究，分析 COVID-19 疫情如何在來自 78 個國家的多元制度與法律環境中，影響財務報導與審計品質。這場疫情提供了一個獨特的全球性研究機會，有助於觀察同一場危機在不同國家制度中可能產生的多樣化結果，進而深化我們對危機與財務報導、揭露，以及審計實務間關係的理解。本文的綜述顯示，多數學術研究集中於審計品質，而探討財務報導和揭露的研究則相對較少。在研究方法方面，超過一半的研究採用問卷與訪談資料，其餘則以檔案資料為主。最後，本文指出未來研究的潛在方向，特別是在跨危機與跨制度環境之比較性研究方面。

關鍵詞：COVID-19、審計品質、危機、披露、財務報導品質

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The Impact of the Global COVID-19 Crises on Financial Reporting Quality and Audit Quality: An International Review

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Abstract: This paper presents a comprehensive review of emerging literature examining the impact of recent global COVID-19 crises on financial reporting and audit quality. Focusing on studies conducted since 2020, we analyze how the COVID-19 pandemic has affected reporting and assurance across diverse institutional and legal settings across 78 countries. The pandemic provides a unique global and natural setting to examine how a single crisis can yield varying outcomes across different national contexts, thereby enhancing our understanding of the relationship between crises and financial reporting, disclosure, and auditing practices. Our review finds that the majority of academic inquiries have concentrated on audit quality, while considerably fewer studies have examined financial reporting. With respect to research methodologies, more than half of the reviewed studies employ survey and interview data, whereas the remainder utilize archival data. Furthermore, we identify opportunities for future studies, particularly for comparative research across different crises and institutional environments.

Keywords: covid-19, audit quality, crisis, disclosure, financial reporting quality

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I. Introduction

Recent global crises (e.g., tariff war, trade tensions, Ukraine-Russia War, Gaza War between Israel and Hamas-led Palestine, India-Pakistan War, inflation, COVID-19 pandemic, and political polarization and social unrest in the US, Brazil, Asia, and Europe) have triggered complex disruptions in the global economy, including economic uncertainty, increased volatility in financial and commodities markets, severe disruptions in supply chains, rapidly shifting governmental and public health policies, and significant changes in worldwide credit and capital markets (Goodell, 2020; Kend and Nguyen, 2022). These crises have increased the risk of misstatements, inaccuracies in financial disclosures, and even intentional manipulation by management to maintain investor confidence or to mitigate the risk of bankruptcy and business failures. These crises also provide management with more opportunities and incentives for self-serving reporting and disclosure behaviors (Caramia, Ruggiero, and Mussari, 2025). Under these conditions, transparent and informative financial reporting and disclosure and precise assessments of the crises' impact on firms' financial performance are crucial for stakeholders' evaluation of a company's current financial position, future wealth-creation capability, and equity valuation (Castilla-Polo and Gallardo-Vázquez, 2016; Leuz and Verrecchia, 2000).

An emerging stream of research in accounting shows that recent crises have changed the behavior of firm managers and auditors (Bao and Huang, 2021; Cejnek, Randl, and Zechner, 2021; Duchin and Harford, 2021; Gompers, Gornall, Kaplan, and Strebulaev, 2021). In this review, we center our analysis on how COVID-19 has affected financial reporting and audit quality across different institutional settings and countries, focusing on studies conducted since 2020. Given the global significance of the pandemic, and the wide range of research across 78 countries—including Australia, New Zealand, the UK, Germany, France, the Netherlands, Sweden, Italy, Ireland, Austria, Switzerland, Romania, Saudi Arabia, South Africa, Yemen, Egypt, China, India, Vietnam, Pakistan, Poland, Turkey, and Azerbaijan—this topic offers valuable international insights into whether and how the same crisis produces different outcomes under varying institutional settings.

Our review highlights the potential impacts of COVID-19 on companies' information environment such as an increased likelihood of earnings management (both upward and downward); more restatements in subsequent periods; and compromised audit quality due to the constraints on audit procedures in the remote/virtual audit environment. All these issues became a significant concern during the COVID-19 pandemic when stakeholders were urgently seeking timely, relevant, and reliable information on the pandemic's impact on entities' current and future operational performance and risk.

For academics, our paper provides a timely review of the emerging research on the impact of the COVID-19 crisis on financial reporting/disclosure quality and audit quality. This systematic review identifies gaps in our understanding of these effects, while contributing to broader research in the critical area of the impact of recent and ongoing global crises on financial reporting and audit quality. Our findings also have important implications for practitioners. First, although the pandemic will eventually end, the likelihood that auditors will continue, at least to some extent, to work remotely is high (Drew, 2020; McCabe, 2020), and such work modality could be adopted during other crises (such as social unrest or even war). Many studies find that auditors have difficulty maintaining audit quality when working remotely. Audit firms need to urgently develop effective ways to improve their audit process and overcome the limitations of the virtual work environment in the post-pandemic era to be ready for other crises. Second, our review highlights how the crisis has increased the complexity and difficulties of financial reporting and disclosure and underscores the need for stakeholders to pay close attention to financial reporting and disclosure when evaluating firms' financial performance.

Our study also has significant regulatory implications. Given the disruptive effects of the digital transformation of accounting and auditing and the increasingly important role of remote auditing during crises, regulators must understand the effectiveness and efficiency of digital, remote financial reporting and auditing. Our study identifies the academic research on the negative impact of remote auditing on audit quality and highlights the need for accounting/auditing standard setters to develop appropriate rules and standards to guide audit firms to more effective techniques for remote auditing that support high-quality audits.¹

II. The Impact of the COVID-19 Crises on Financial Reporting/Disclosure Quality

Like many other crises, the COVID-19 pandemic's severity, magnitude, duration, and economic consequences are uncertain and evolving. For firms, they include, but are not limited to, the following: the loss of significant markets, primary customers, and earnings; labor deficiencies; considerable decline in the value of assets employed to produce cash flows; substantial declines in current assets' value, especially inventory; postponement of the introduction of new products/services; fluctuation in the foreign exchange; measurements influenced by the high uncertainty; and company solvency (IAASB, 2020a). The estimation of the impact of COVID-19 is complicated given its primary, secondary,

¹ KPMG (2020) specialists make the following recommendations to address the impact of the pandemic: monitoring the legal and fiscal implications; reviewing employee mobility policies; professional training of employees; improving security technologies; and tracking additional costs.

and tertiary effects. Specifically, Joshi (2020) points out that the primary effect is the direct and severe economic impact on numerous companies' financial statements; the secondary effect is the uncertainty of valuing assets and liabilities; and the tertiary effects relate to going concern status and numerous auditing issues. For management, delays in crucial metrics, such as sales volume discounts, supply chain disruptions, decline in prices, revenue recognition, valuation (inventory, receivables, fixed asset, nature reserves), impairment losses, expected credit loss, fair value measurement, hedge accounting, and going concern assessments, require the reassessment of financial reporting/disclosure processes (Joshi, 2020; Petkov, 2020; Diab, 2021). Any of these matters may cause management to revisit accounting assumptions and estimates.²

Although many companies themselves warned investors that their quarterly or year-end financial statements during the pandemic might be flawed given the uncertainty surrounding the pandemic (Maurer, 2020), and auditors noted that the lack of on-site visits during the pandemic might compromise their ability to monitor financial reporting and disclosure quality, empirical studies find mixed evidence of the impact of the pandemic on financial reporting and disclosure quality. It is possible that in response to the heightened uncertainty, managers were extra careful in the financial reporting and disclosure and improved the transparency and quality of financial information (Mehnaz, Rahman, and Kabir, 2022) during the pandemic, as investors demanded information on the impact of the pandemic on entities' operational performance and heightened risk (Kend and Nguyen, 2022). Studies of the impact of the pandemic on financial reporting/disclosure quality are reviewed below.

Recent research suggests the pandemic has significantly impacted financial reporting and disclosure quality. But the results of studies using different research methods in various institutional backgrounds vary significantly. Some studies document the adverse effects of COVID-19 on financial reporting and disclosure quality, as indicated by increases in earning management in China and the USA (Liu and Sun, 2022; Xiao and Xi, 2021), an increased likelihood of restatement in the USA (Gong, Ho, Jin, and Kanagaretnam, 2022), more tax avoidance (Kamarudin, Wan Ismail, Harymawan, and Mohamad Ariff, 2025), and lower relevance and informativeness of financial information in Poland and Turkey (Honko, Remlein, Rowinska-Kral, and Swietla, 2020; Loghin and Dumitraşcu, 2022; Pham, Ho, Nguyen, Pham, and Bui, 2023).

² For example, according to Deloitte (2020), measuring the expected credit loss (ECL) for banks is an especially challenging task in pandemic financial statements because it includes estimates of credit events and related cash shortfalls that use a probability-weighted approach, and uncertainty makes these estimations very complicated. Nkomombini, Oellrich, Kilbourn, Weber, van der Schyf, Zondo, Wahab, Cassim, and Steenkamp. (2023) explore the effects of the pandemic on the measurement and disclosure of ECL with a focus on South African listed banks and find that ECL allowance increases substantially during the first year of the pandemic.

Specifically, using a sample of 2,029 publicly listed Chinese companies, Xiao and Xi (2021) investigate the relationship between the pandemic and firms' earnings management practices and how this relationship is moderated by firms' corporate social responsibility (CSR) and external corporate governance mechanisms. They find an overall increase in accrual-based earnings management (AEM) but a significant decline in real activity-based earnings management (REM) in firms in regions most severely affected by the pandemic. In these regions, CSR moderates the relationship between the pandemic and both AEM and REM, such that higher CSR performance weakens the impact of the pandemic. Moreover, firms audited by a Big 10 auditor are less likely to manipulate earnings through AEM or REM than their counterparts. To investigate similar issues in different economic environments, Lee, Choi, and Lee (2024) use a sample of 38,046 firm-quarter observations from 46 countries (e.g., the UK, the US, Australia, Belgium, Canada, Korea, France, Poland, Norway, Mexico, Kuwait, Malaysia, United Arab Emirates, Peru) from the period of 2020Q1–2020Q4 to show that firms in countries with more severe COVID-19 outbreaks are more likely to engage in income-increasing REM. Similarly, Liu and Sun (2022) examine whether the COVID-19 pandemic has influenced earnings management in the United States. They find that some firms strategically engaged in income-decreasing earnings management “to take a big bath” in reported earnings during the first year of the pandemic. Consistently, Gong et al. (2022) document lower financial reporting quality, measured by a higher likelihood of restatement and more significant abnormal accruals, in financial statements filed in early 2020, relative to those completed before the implementation of COVID-19 travel restrictions/stay-at-home (S@H) orders. Similarly, using data from UK-listed companies, Hsu and Yang (2022) show that the quality of companies' financial reporting is lower during the pandemic period than in the pre-pandemic period. Specifically, companies engage in more earnings management through actual activities during the pandemic, but a large board helps mitigate the pandemic's negative impact on financial reporting quality. Using a sample of 352 Turkish and Azeri public companies from the 2019 and 2020 financial periods, Loghin and Dumitraşcu (2022) show that the relevance of financial reports drops during the pandemic but the timeliness increases. Using a sample of Jordanian publicly listed companies, Al-Begali and Phua (2023) find that companies increase real earnings management during the COVID-19 pandemic. Overall, these studies show that across different institutional backgrounds, COVID-19 significantly impacts financial reporting quality, either through AEM or REM.

Investigations conducted in the former Soviet Bloc countries' economic environment show that firms do not fully disclose relevant information, an attitude probably inherited from the Soviet era. In an analysis of the 2019 (annual) and 2020 (interim) financial

statements of 120 companies listed on the Warsaw Stock Exchange (Poland), Honko et al. (2020) indicate that disclosures of the events after the balance sheet date do not allow users of financial statements to assess the risk associated with the impact of COVID-19. Some of the financial statements completely ignore the risk related to the pandemic, and in other cases, the risk-related disclosures are symbolic.

In direct contradiction with the results reported above, some studies fail to find any adverse effects of COVID-19 on financial reporting and disclosure quality or evidence of improved transparency in financial reporting and disclosure (Li and Luo, 2024; Mehnaz et al., 2022; Tibiletti, Marchini, Gamba, and Todaro, 2021). Specifically, in an examination of the changes in accounting estimates (CAEs) and footnote disclosures in the quarterly and annual reports of US companies, Li and Luo (2024) find no evidence that the incidences of CAEs in 10-Ks or the number of firms reporting CAEs are significantly different in the pre-pandemic and pandemic periods. However, the incidence of CAEs in 10-Qs increases during the pandemic, especially CAEs related to revenue recognition. Li and Luo (2024) also document that although the dollar impact of 10-K CAEs on current financial statements is higher during the pandemic, firms with CAEs, especially positive CAEs, in both 10-Ks and 10-Qs are less likely to use CAEs to manage earnings in the pandemic period. Overall, Li and Luo's (2024) archival evidence in the US setting suggests that firms were more careful about disclosing CAEs and avoided using CAEs for income-increasing earnings management tools during the pandemic. Consistently, Mehnaz et al. (2022) find that Australian real estate firms increased supplementary fair value disclosures during the pandemic, suggesting that real estate firms responded to the potential negative impact of the acute market uncertainty regarding the representative faithfulness and relevance of fair value adjustments by enhancing the transparency of fair value disclosures. Similarly, using a content analysis of a sample of hand-collected data from 152 randomly selected Italian listed companies, Tibiletti et al. (2021) examine how the listed companies in Italy have addressed the problems caused by the pandemic and find that, in terms of going concern, the companies do not show particular issues or weaknesses and that the going concern status corresponds with the financial position and operational performance reported in their financial statements.

To sum up, the impacts of COVID-19 on financial reporting and disclosure quality, accrual-based vs. real earnings management, the direction of earnings management, the likelihood of subsequent restatement, and transparency of disclosure remain critical but unsolved empirical questions in future research.

Table 1 Effect of the COVID-19 Pandemic on Financial Reporting Quality/Disclosure

Source	Journal	Country /Region	Research Method	Findings
Al-Begali and Phua (2023)	<i>Cogent Economics and Finance</i>	Jordan	Archival	A significant positive relationship between COVID-19 and real earnings management.
Badawy (2021)	<i>Working paper</i>	Egypt	Archival	The timeliness of limited review reports is positively and significantly associated with investors' perceptions of the quality of financial reporting during the pandemic.
Honko et al. (2020)	<i>European Research Studies Journal</i>	Poland	Content Analysis	Disclosures of the events after the balance sheet date do not allow users of financial statements to assess the risk associated with the pandemic. Some companies ignore pandemic-related risks in their financial statements or offer symbolic disclosures.
Hsu and Yang (2022)	<i>Finance Research Letters</i>	The UK	Archival	The quality of companies' financial reporting is lower during the pandemic period. Specifically, companies engage in more earnings management through actual activities during the pandemic. A large board mitigates the pandemic's negative impact on financial reporting quality.
Kamarudin et al. (2025)	<i>Journal of Financial Crime</i>	32 countries (e.g., Japan, China, the USA, Brazil, Ireland, Belgium, Singapore, Norway, Switzerland, Pakistan, India, the Philippines and Indonesia)	Archival	Tax avoidance is higher during the COVID-19 pandemic, which could be driven by the urgent need for businesses to preserve their financial resources.

Table 1 Effect of the COVID-19 Pandemic on Financial Reporting Quality/Disclosure (Continue)

Source	Journal	Country /Region	Research Method	Findings
Khan (2020)	<i>International Journal of Experiential Learning and Case Studies</i>	Pakistan	Case study	The financial reporting and disclosure areas impacted by the pandemic are cash forecast plans, goodwill impairment process, lower cost or net realizable value for inventory, fixed overhead cost, and restructuring activities.
Lee at al. (2024)	<i>Applied Economics Letters</i>	46 countries (e.g., the UK, the US, Australia, Belgium, Canada, Korea, France, Poland, Norway, Mexico, Kuwait, Malaysia, Peru)	Archival	Firms in the countries with more severe COVID-19 outbreaks are more likely to engage in income-increasing REM.
Li and Luo (2024)	<i>Asian Review of Accounting</i>	The US	Archival	During the pandemic, firms have been more careful about disclosing CAEs and have avoided using CAE for income-increasing earnings management tools.
Liu and Sun (2022)	<i>Managerial Auditing Journal</i>	The US	Archival	A significant decrease in discretionary accruals between 2019 and 2020 indicates that firms engaged in more income-decreasing earnings management take a “big bath” in reporting earnings during the first full year of the pandemic.
Loghin and Dumitraşcu (2022)	<i>Audit Financier</i>	Turkish and Azeri	Archival	Financial reporting timeliness increases but relevance drops during the pandemic period.

Table 1 Effect of the COVID-19 Pandemic on Financial Reporting Quality/Disclosure (Continue)

Source	Journal	Country /Region	Research Method	Findings
Nkomombini et al. (2023)	<i>Journal of Economic and Financial Sciences</i>	South African	Archival	In South African listed banks, expected credit loss allowance increases substantially in the first year of the pandemic.
Pham et al. (2023)	<i>Journal of Sustainable Finance and Investment</i>	Vietnam	Questionnaire survey	Financial reporting information is less value-relevant during the pandemic period.
Tibiletti et al. (2021)	<i>Universal Journal of Accounting and Finance</i>	Italian	Content analysis	Companies do not show any particular problems or weaknesses about going concern status in the pandemic, and the financial statements accurately reflect the situation.
Xiao and Xi (2021)	<i>Journal of Accounting and Taxation</i>	China	Archival	There is an increase in accrual-based earnings management and a significant decline in real activity-based earnings management in the regions most severely affected by the pandemic. The effect is weakened by CSR performance and by having Big 10 auditors.

III. Impact of Crises on Audits

Regulators, preparers, and auditors have described the 2020 financial reporting period as one of the most challenging they have experienced due to the unprecedented disruptions, heightened uncertainties, instability, and risks, and the problems associated with remote work during the pandemic (e.g., AUASB, 2020a, 2020b). In addition, the COVID-19 pandemic precipitated an extensive involuntary shift to remote work, limiting auditors' capacity to conduct on-site audits, changing auditors' established practices and routines, and dramatically reducing auditors' abilities to gather adequate evidence and reshaping work and its supervision for audit firms and their clients (Kelly, LaMothe, and Baudot, 2024; Caramia et al., 2025). Additionally, auditors faced pressure from their clients, especially financially distressed clients, to cut audit fees, which may force auditors to reduce their audit efforts/hours to minimize the loss of engagement (Albitar, Gerged, Kikhia, and Hussainey, 2021). Moreover, during the pandemic, auditors experienced significant salary reductions, which may have had detrimental impacts on auditors' performance, as they might be less motivated to carry out their tasks efficiently, leading to adverse effects on audit quality (Albitar et al., 2021). At the same time, the complexity and uncertainty triggered by the crisis prompted stakeholders to demand higher financial reporting quality and audit quality. Accountants, auditors, and regulators may have had to quickly find solutions to ensure high-level reporting and auditing standards (Atkins, Buchling, Cerbone, Lange, Maroun, Kok, Ram, Sebastian, Wadee, and Van Zijl, 2020) under these conditions.

Christ, Eulerich, Krane, and Wood (2021) point out that the pandemic forced most audit offices to conduct at least some audit work remotely using emerging technologies—whether they were ready or not.³ Strict lockdown measures globally hampered the ability of auditors to perform audits face-to-face. They forced a shift to remote work, which raised multiple challenges related to the digitalization of the audit process, such as a lack of technological awareness and readiness among audit professionals, poor technological infrastructure in audit firms, and incompatibility between current auditing standards and technology-aided remote audits (ACCA, 2020; Sharma, Sharma, Joshi, and Sharma, 2022). As KPMG (2020) specialists point out, work-from-home strategies affect the appropriateness and relevance of audit evidence, which in turn influences audit quality.

³ A questionnaire that PwC (2020b) Romania sent to companies in various sectors shows that a third of the companies surveyed stopped working after the state of emergency was declared, a fifth restricted their activity, another fifth set up distance work, and a quarter decided to resort to technological unemployment.

Indeed, audit deficiencies in audit documentation, audit evidence, and the evaluation of auditing internal controls, inventory counts, and going concern issues represent 32% of all audit deficiencies in 2020 PCAOB inspection reports (Fogel-Yaari and Gebhart, 2022).

Although auditors can conduct virtual inventory and property, plant, and equipment (PPE) inspections through online tools, these cannot replicate the thoroughness of in-person physical inspections. In a survey of auditors, Moyes (1997) finds that methods involving direct evidence collection, such as in-person viewing of inventory in public warehouses, are more effective for detecting fraud than indirect evidence collection, such as discussing the inventory cycle with managers. Virtual observation does not allow auditors to collect firsthand direct evidence, interact with the underlying assets, or evaluate controls organically while examining the premises. Inquiries based on virtual inspections are, therefore, less well-informed. Appelbaum, Budnik, and Vasarhelyi (2020) discuss alternative approaches to inventory audits using virtual tools, such as streaming video applications, and caution that detecting details, such as damage to inventory, may be more difficult than in physical inspections. In addition, Durkin, Jollineau, and Lyon (2021) show that auditors are more distracted when they use rich communication modes, such as video conferencing, with their clients and that distracted auditors are more likely to evaluate clients' responses as high quality and tend to ask fewer follow-up questions. Auditors are severely disadvantaged by the lack of physical access to clients and their on-site resources (Gong et al., 2022). Replacing in-person interactions between auditors and management with remote, virtual communication likely constrains auditors' ability to exercise professional skepticism through follow-up questions and back-and-forth conversations (Bennett and Hatfield, 2018). Such a reduction in professional skepticism may hamper auditors' ability to challenge questionable assumptions and estimates made by the management (Gong et al., 2022). Such normality changes also impact the communication between audit committees and management and among audit committee members (Charamis and Rodosthenous, 2022), which could also diminish the audit committee's oversight of management's estimate and judgment in financial reporting.

The heightened difficulties and challenges of online working environments and increased scrutiny of financial reports by investors, regulators, and debtholders, may inspire auditors to raise their professional skepticism in their evaluation of financial statements produced in challenging and uncertain environments (e.g., ACCA, 2020; Diab, 2021; Gong et al., 2022; IAASB, 2020a, b; ICAI, 2020; Kend and Nguyen, 2022; Luo and Malsch, 2023; Sharma et al., 2022; Joshi, 2020), as they did in response to the 2008 financial crisis (Geiger,

Raghunandan, and Riccardi, 2014; Xu, Carson, Fargher, and Jiang, 2013). Consistent with this observation, the Association of Chartered Accountants (ACCA) (2020) states that sophisticated and time-consuming additional audit procedures are required to address the uncertainty induced by the COVID-19 pandemic (also see Accountancy Europe, 2020; Albitar et al., 2021; KPMG, 2020; PwC, 2020a). Recent studies on the impact of COVID-19 on audit procedure (e.g., Diab, 2021; Crucean and Hategan, 2021; Kend and Nguyen, 2022) show that auditors revised their audit plans to address the audit risk associated with the pandemic and paid greater attention to accounting estimates and the assessment of going concern. For example, studies show that during the pandemic, auditors used more analytical procedures, obtained more external evidence through third parties to verify accounting numbers, and lowered the use of physical evidence (Kend and Nguyen, 2022; KPMG, 2020; PwC, 2020a; Albitar et al., 2021). Similarly, Bennett and Hatfield (2018) document that the increase in electronic communication due to remote working between auditors and management lead auditors to request more records, potentially increasing audit quality. A survey by Jin, Tian, Wu, and Xin (2022) suggests that remote auditing may have several advantages, such as employing information technology, reducing audit costs (e.g., traveling expenses), and reducing the time spent in evidence collection in specific audit procedures (e.g., confirmation through online channels), which can improve audit effectiveness and efficiency and translate into better audit quality.

Moreover, in response to this transformation of the work environment, many of the standards and regulatory guidelines for audit functions have been revised to reduce the risks brought by COVID-19-related disruptions, such as material misstatement and the going concern principle (ACCA, 2020; FRC, 2020; IAASB, 2020a; KPMG, 2020; PCAOB, 2020). For instance, the guideline for checking PPE along with inventory counts onsite has been revised to allow live streaming of the PPE and inventory count, which allows auditors to verify the existence of fixed assets via camera (AICPA, 2020). Indeed, long before the pandemic, professional bodies and governing bodies across the globe have encouraged firms to make use of technology for quality assurance monitoring (ICAEW, 2017; ACCA, 2020; AICPA, 2020; AUASB, 2020c; CAANZ, 2020; FRC, 2020; IFAC, 2020). For instance, the Auditing and Assurance Standards Board (AUASB) has revised various guidelines on auditing standards to better reflect the use of emerging technologies in the performance of quality audits (AUASB, 2020c). The exogenous shock of COVID-19 provides a natural experiment on how technology-aided audits with little in-person interaction impact audit procedure, auditor responsibility, and ultimately audit quality. In

interviews with 63 senior auditors from reputable auditing firms in India, Sharma et al. (2022) find that the auditing profession used technology to maintain the legitimacy of audit reports under pandemic-imposed disruptions. Moreover, they find that auditors now support integrating these emerging technologies into their auditing practices to ensure data accuracy and transparency and are keenly interested in continuing remote audits to maintain audit quality in the future. The experience of COVID-19 appears to have forced the auditing profession to overcome their reluctance to adopt technologies previously used by only Big 4 and large audit companies.

Impact of the Pandemic on Audit Procedures

The COVID-19 pandemic has profoundly impacted audit firms' operations by creating enormous pressure to find alternative ways to collect audit evidence and complete engagements (Appelbaum et al. 2020). The challenges facing audit firms include maintaining fees, finding well-trained staff, the need for greater attention to accounting estimates, and difficulties in issuing audit opinions, especially going concern assessments (Albitar et al., 2021; Crucean and Hategan, 2021; Diab, 2021; Hategan, Pitorac, and Crucean, 2022; Hay, Shires, and Van Dyk, 2021). Several publications by the IAASB Staff Audit Practice Alert (IAASB, 2020a, b, c, d) identify the areas of audit reporting most affected by the pandemic: going concern, subsequent events, accounting estimates, interim financial reporting, and fraud detection. For example, according to ISA 700 and 701, auditors forming an opinion on financial statements, including critical audit matters (KAMs), are required to assess the new uncertainties introduced by the pandemic into the calculation of accounting estimates (i.e., impairment calculations) as well as the impact of new or changed laws or regulations (IAASB, 2020d). Crucean and Hategan (2021) show that auditors revise their audit plans to address audit risk posed by subsequent events imposed by the pandemic, especially those involving significant uncertainties regarding the going concern of the focal company. In a document and website analysis, Diab (2021) observes that the pandemic has substantial implications for the whole audit process, including new fraud risks, and thus requires changes in risk assessment and accounting estimates, and revisions to existing audit plans.

Among all these heightened audit risks, fraud detection attracts the most attention from audit practitioners. According to Deloitte (2021), emerging fraud risks associated with the pandemic include tunneling, disclosure-related frauds, inappropriate earnings recognition, inappropriate capitalization of expenditures, vendor fraud, and procurement fraud. Karpoff (2021) also points out that internal control breakdowns increase the

opportunities for fraud during the pandemic. Diab (2021) points out that employees face pressure to make fraudulent journal entries to enhance the company's performance. In addition, in response to frequent news items related to job losses and fears of disastrous personal financial situations, the pandemic gave many employees the incentive to commit fraud. Hay et al. (2021) describe the early effects of the pandemic on auditing in New Zealand and find that the pandemic lead to increased auditor responsibility for fraud detection, more reporting of internal controls, and changes in corporate governance. In response to the shifts in focus and new commitments, auditors have amended audit procedures to adapt to the new audit environment. Below we review the literature on the impact of the pandemic on audit procedures.

In interviews with 24 auditing and accounting professionals located in China, including both Chinese nationals and foreign expatriates working in China, with clients listed in the U.S, Hong Kong, and mainland China, Luo and Malsch (2023) document auditors' experience of 1) disruptions in formal and standardized aspects of audit processes, including onsite inspection and examination of physical items and third-party confirmation and inquiries; and 2) significant disruptions in face-to-face interactions within the audit team and between auditors and clients. Such challenges significantly destabilize the system of audit knowledge and deteriorate audit quality, and the effects are likely to continue well beyond the COVID-19 pandemic. For example, auditors who were juniors during the 2020 lockdowns may not have been adequately educated in their firms' professional and technical culture and have now become senior auditors. Such knowledge gaps reproduce over time and follow the trail of hierarchical climbing.

In their textual and readability analysis of auditors' critical audit matters disclosure, Kend and Nguyen (2022) find that 1) 3% of audit procedures undertaken during 2020 are designed to address audit risks associated with the pandemic; 2) smaller audit firms report many fewer audit procedures related to pandemic audit risks than Big 4 audit firms; 3) the insurance, real estate, transportation, and banking industries undertook significantly more COVID-19-related audit procedures in 2020 than other industries; and 4) asset valuation and revenue recognition have the most audit procedures to specifically address pandemic-related audit risks. The effects of the pandemic are strongest on work procedures related to changes in audit plans, revision of identified risks, assessment of accounting estimates and policies, and other difficulties encountered during the audit engagement. Similarly, using a sample of companies listed on the primary market on European stock exchanges in 2019 and 2020, Hategan et al. (2022) find that the average number of KAMs related to the effects

of the pandemic is 1.73 but ranges from 1 to 7, suggesting that auditors identify the impact of the pandemic in KAMs and explain in the KAM report how they adapt audit procedures to reduce audit risk. Indeed, the effect of the pandemic is the topic of 70% of the KAMs in the 2019–2020 period. In addition, Al-Khasawneh (2021) examines the impact of the pandemic on the external audit process of Jordanian banks and finds that the pandemic significantly affects audit planning procedures, auditing risk assessment, and methods of collecting evidence and affects the content of audit reports.

Based on their questionnaire survey, Farghaly, Basuony, Noureldin, and Hegazy (2024) find that the COVID-19-caused disruptions in operational results, changes in internal control, and stress on client personnel resulting in significantly lower quality of audit evidence. However, the study finds no significant association between the quality of audit evidence and social distancing, changes in the economic environment, or time constraints and stress on audit personnel.

Impact of the Pandemic on Audit Quality

The changes in audit procedures and auditors' responsibility during the pandemic ultimately impacted the quality of the audit engagements. Diab (2021) points out that the pandemic might have limited auditors' access to adequate and proper audit evidence. For example, the audit staff might be unable to get original copies of documents related to significant issues, need to rely on scanned copies, or be unable to physically inspect the inventory balances reported in corporate financial statements. Using the archival data of US publicly listed companies, Ettredge, Mao, Stone, and Sun (2025) examine the impact of S@H mandates on audit fee and audit delays. Ettredge et al. (2025) find no evidence of a change in audit fees in response to initial S@H mandates; however, S@H mandates are associated with an increase in filing delays. The effect of S@H mandates on filing delays is stronger for engagements with high misstatement risk and engagements with high coordination challenges than for their counterparts. Using a sample of Ghanaian companies, Musah, Okyere, and Osei-Bonsu (2023) find that the COVID-19 pandemic is positively associated with both audit fees and audit delays. Similarly, using a sample of Taiwan companies, Lin and Lin (2024) find that Taiwan companies with foreign subsidiaries have longer audit delays at the beginning of COVID-19 crisis.

Taking advantage of the variation in the dates of S@H orders issued by different US states, Gong et al. (2022) investigate the impact of COVID-19 travel restrictions/ S@H orders in the USA in early 2020 on audit quality. They find that engagements under these restrictions produce lower quality audits, measured through restatements and discretionary

accruals, than those completed before the travel restrictions/ S@H orders were implemented. Furthermore, they find this decrease in audit quality is greater in firms with high inventory relative to assets, high R&D expenses relative to assets, and non-Big 4 auditors. Overall, Gong et al. (2022) suggest that work-from-home arrangements diminish audit quality, that physical inspections of physical inventory provide firsthand evidence that is not effectively replaced by virtual observation, and that non-Big 4 auditors have not adapted to the sudden shift to remote working as swiftly and successfully as Big 4 auditors.

Using both survey and archival data in the Chinese setting, Jin et al. (2022) document that audit quality (measured by abnormal accrual and modified audit opinions) decreases when auditors switch to remote auditing following the outbreak of the pandemic. The negative effect of remote auditing is more evident among non-local or short-tenure auditors, implying that insufficient knowledge about the clients may further contribute to this reduction in audit quality. They also find more earnings restatements and financial misconduct with remote auditing than with in-person auditing. Jin et al. (2022) find that the adverse effects of remote auditing on audit quality can be mitigated by adjusting audit procedures in a timely way, relying more on audit risk evaluation and data analysis, emphasizing the sufficiency and reliability of digital evidence, or exploiting information and communication technology.

The above archival findings on the negative impact of COVID-19 on audit quality are further supported by the evidence from field studies. Specifically, based on an analysis of survey responses from 149 accounting professionals, Heltzer and Mindak (2021) find that the physical restrictions and economic hardships resulting from COVID-19 impede auditors' productivity, ability to perform their work, ability to maintain relationships with clients and co-workers, and ability to sell future services to prospective clients. Auditors believe that the COVID-19 pandemic reduced the effectiveness of clients' internal controls and made it more difficult for auditors to determine the effectiveness of these internal controls. Auditors additionally believe that COVID-19 has made it more challenging to decide on the going concern status of their clients. Furthermore, using survey questionnaire data collected from auditing professionals in Saudi Arabia and Yemen, Hazaea, Tabash, Rahman, Khatib, Zhu, and Chong (2022) show that audit quality is significantly lower during the pandemic due to its negative impact on audit fees, audit procedures (e.g., heavy reliance on analytical methods and reduced substantive tests), and audit staff salaries.

However, the negative impact of COVID-19 on audit quality is not recognized by all audit practitioners. For example, Altiero, Baudot, and Hazgui (2024) interview 30 audit

professionals in the US and show that the pandemic accelerated an open attitude toward the use of new technologies in assurance engagements, increasing perceptions of the usefulness of technology in engagement efficiency, particularly easier and faster evidence gathering. Similarly, Stuart, Olsen, and Der (2024) interview 23 audit partners and managers in Norway and Ghana and document that auditors' and clients' willingness to work digitally is higher during and after the pandemic than in the pre-pandemic period. Based on surveys of Egyptian auditors, Hegazy, El-Haddad, and Kamareldawla (2022) find that during the pandemic, auditors were more effective in recognizing KAMs compared to other audit matters because of the increased uncertainty and judgments in the financial statements, thus enhancing users' confidence in both the audit and the financial reporting processes. Using archival data of Jordanian firms, Alharasis, Alkhwalidi, and Hussainey (2024, p. 420) document positive relationship between COVID-19 and audit efforts (proxied by audit fees) "validating the severe effects of the crisis on audit complexity and hazards and supporting the necessity of extra, high quality audit service." Wang, Chiu, and Kogan (2024) show that an auditor's going concern opinion decision is positively associated with COVID-19 morbidity and mortality in the Metropolitan Statistical Area where the audit client's headquarters are located, due to auditor's risk-averse attitude toward clients' financial stress and bankruptcy risks caused by the pandemic. Al-Ansi's (2022) questionnaire survey of 193 Saudi external auditors investigating the effect of audit effort on audit quality during the pandemic shows that auditors with virtual audit proficiency conducted standard audit procedures and collected appropriate and sufficient evidence and to maintain high-quality audits during the pandemic. Al Shbail, Jaradat, Al-Hawamleh, Hamdan, and Musleh Alsartawi's (2025) questionnaire survey of 200 Jordanian audit professionals from audit firms' junior, senior and managerial levels demonstrates that remote auditing can enhance audit quality in non-Big 4 firms, and the strength of this effect is further bolstered by the auditor's technical knowledge, communication skills, and professional skepticism. In a survey of 237 internal auditors in Germany, Eulerich, Wagener, and Wood (2022) provide evidence that internal auditors perceive no difference in the efficiency and effectiveness of remote audits relative to in-person audits. However, they also find that perceived efficiency and effectiveness increase with the internal auditors' experience with remote audits and that internal auditors believe that stakeholders do not distinguish between remote and in-person audits in their decision-making; whether this perception among audit practitioners is legitimate needs to be tested in future empirical studies.

Table 2. Effect of the Pandemic on Audit Quality

Source	Journal	Country /Region	Research Method	Main Findings
Al-Ansi (2022)	<i>Cogent Business and Management</i>	Saudi Arabia	Questionnaire Survey	Auditors with virtual audit proficiency conduct standard audit procedures, collect appropriate and sufficient evidence, and maintain high-quality audits during the pandemic.
Albitar et al. (2021)	<i>International Journal of Accounting and Information Management</i>	UK, Sweden	Desk study	The social distancing associated with the pandemic negatively influences the quality of the audit process, specifically, audit fees, going concern assessment, audits of human capital, audit procedures, audit personnel salaries, and audit effort.
Al Shbail et al. (2025)	<i>Journal of Financial Reporting and Accounting</i>	Jordan	Questionnaire Survey	Remote auditing can enhance audit quality in non-Big 4 firms, and the strength of this effect is further bolstered by the auditor's technical knowledge, communication skills, and professional skepticism.
Alharasis et al. (2024)	<i>International Journal of Law and Management</i>	Jordan	Archival	There is a significant and positive relationship between COVID-19 and audit efforts (proxied by audit fees).
Altiero et al. (2024)	<i>Auditing: A Journal of Practice and Theory</i>	USA	Interview	The pandemic accelerated an open attitude toward new technologies in assurance engagements. It increased perceptions of the usefulness of technology in engagement efficiency, particularly easier and faster evidence gathering.
Caramia et al. (2025)	<i>Abacus</i>	Italian	Survey	The qualitative survey of auditors of Italian municipalities shows that before the crisis auditors focused on compliance; however, in the face of time and information constraints resulting from the crisis, auditors collaborated more with municipalities. After the crisis, to reclaim independence, auditors withdrew collaboration.

Table 2. Effect of the Pandemic on Audit Quality (Continue)

Source	Journal	Country /Region	Research Method	Main Findings
Crucean and Hategan (2021)	<i>Audit Financier</i>	Romania	Archival	The pandemic significantly impacted most industries; auditors revised their audit plans to address audit risk posed by events imposed by the pandemic, especially those contributing to significant uncertainties regarding the going concern of the focal company.
Diab (2021)	<i>Journal of Legal, Ethical, and Regulatory Issues</i>	Europe	Survey	The effects of the pandemic on the whole audit process include the emergence of new fraud risks, new risk assessment and accounting estimate procedures, and revisions to existing audit plans.
Ettredge et al. (2025)	<i>Auditing: A Journal of Practice & Theory</i>	USA	Archival	There is no evidence of a change in audit fees in response to initial S@H mandates. However, S@H mandates are associated with an increase in filing delays; S@H mandates increase filing delays to a greater extent for engagements with high misstatement risk and engagements with high coordination challenges.
Eulerich et al. (2022)	<i>Journal of Information Systems</i>	German	Survey	Internal auditors perceive no difference in the efficiency and effectiveness of remote audits relative to in-person audits. This perceived efficiency and effectiveness increases with the auditors' experience with remote audits. Auditors do not perceive differences in stakeholders' reliance on remote vs. in-person audits.
Farghaly et al. (2024)	<i>Journal of Accounting in Emerging Economies</i>	Egypt	Survey	The disruption in operational results, changes in the internal control, and the stress on client personnel caused by COVID-19 significantly lowers the quality of audit evidence. However, the study finds no significant association between the quality of audit evidence and COVID-19-related social distancing, changes in the economic environment, time constraints, or stress on audit personnel.

Table 2. Effect of the Pandemic on Audit Quality (Continue)

Source	Journal	Country /Region	Research Method	Main Findings
Gong et al. (2022)	<i>Managerial Auditing Journal</i>	USA	Archival	Audit engagements affected by S@H and travel restrictions produce lower audit quality, as measured through restatements and discretionary accruals, relative to those completed before the travel restrictions/ S@H orders. This decrease in audit quality is more substantial in firms with high inventory relative to assets, high R&D expenses relative to assets, and non-Big 4 auditors.
Hategan et al. (2022)	<i>Managerial Auditing Journal</i>	European Stock Exchanges (UK, France, German, the Netherlands, Italy, Guernsey, Poland, Switzerland, Austria and Ireland)	Archival	The average number of KAMs related to pandemic impacts in the 2019–2020 period is 1.73, ranging from 1 to 7. Hence, auditors use KAMS to identify the pandemic's impact and explain how they adapted the audit procedures to reduce audit risk. Indeed, the effects of COVID-19 were identified in 70% of the KAM topics identified in the 2019–2020 period.
Hay et al. (2021)	<i>Pacific Accounting Review</i>	New Zealand	Archival	The pandemic increases auditor responsibility, introduces changes in reporting in internal control and changes in corporate governance, and increases auditor responsibility for fraud detection.
Hazaea et al. (2022)	<i>Emerging Science Journal</i>	Saudi Arabia and Yemen	Questionnaire Survey	Audit quality is significantly lower during the pandemic due to the pandemic's negative impact on audit fees, audit procedures (e.g., heavily relying on analytical procedures and reducing substantive tests), and audit staff salaries.

Table 2. Effect of the Pandemic on Audit Quality (Continue)

Source	Journal	Country /Region	Research Method	Main Findings
Hegazy et al. (2022)	<i>Managerial Auditing Journal</i>	Egypt	Survey	During the pandemic, auditors were more effective in recognizing KAMs compared to other audit matters, thus enhancing users' confidence in both the audit and financial reporting processes.
Heltzer and Mindak (2021)	<i>Journal of Accounting, Ethics, and Public Policy</i>	USA	Survey	The physical restrictions and economic hardships resulting from the pandemic impeded accountants' productivity, ability to perform their work, maintain relationships with clients and co-workers, and sell future services to prospective clients. Auditors believe pandemic restrictions reduced the effectiveness of clients' internal controls and made it more challenging to determine the effectiveness of internal controls and determine the going concern status of their clients.
Jin et al. (2022)	<i>Working paper</i>	China	Interview, questionnaire survey, archival	Audit quality is lower when auditors switch to remote auditing, and this negative effect is more evident among non-local or short-tenure auditors, implying that insufficient knowledge about the clients may contribute to the reduction in quality. More earnings restatements and financial misconduct also follow remote auditing. The adverse effect of remote auditing on audit quality can be mitigated by adjusting audit procedures in a timely way, relying more on audit risk evaluation and data analysis, emphasizing the sufficiency and reliability of digital evidence, and exploiting information and communication technology.
Kend and Nguyen (2022)	<i>Managerial Auditing Journal</i>	Australia	Archival	In their sample of audit procedures undertaken during 2020, 3% are designed to address audit risks associated with the pandemic, and smaller audit firms report fewer audit procedures related to COVID-19 audit risks than larger audit firms.

Table 2. Effect of the Pandemic on Audit Quality (Continue)

Source	Journal	Country /Region	Research Method	Main Findings
Lin and Lin (2024)	<i>Journal of Contemporary Accounting</i>	Taiwan	Archival	Companies with foreign subsidiaries have longer audit delays at the beginning of COVID-19 crisis.
Luo and Malsch (2023)	<i>AUDITING: A Journal of Practice & Theory</i>	China	Semi-structured interviews	In interviews with 24 auditing and accounting professionals located in China, Luo and Malsch (2023) document that auditors report experiencing 1) disruptions in formal and standardized aspects of audit processes, including onsite inspection and examination of physical items and third-party confirmation and inquiries; and 2) significant disruptions in face-to-face interactions within the audit team and clients. Investors' pricing of fair value adjustments increases with the increase in disclosures during the market uncertainty of 2020, but this relationship does not exist in the pre-pandemic period. The COVID-19 pandemic is positively associated with audit fees and audit delays.
Mehnaz et al., (2022)	<i>Managerial Auditing Journal</i>	Australian	Archival	The auditing profession uses technology to respond to established audit processes and practice disruptions. Most auditors strongly support integrating emerging technologies into their auditing practices to ensure data accuracy and transparency.
Musah et al. (2023)	<i>Cogent Business & Management</i>	Ghana	Archival	Auditors and clients were more willing to work digitally during the pandemic.
Sharma et al. (2022)	<i>Managerial Auditing Journal</i>	India	Semi-structured interviews	An auditor's going concern opinion decision is positively associated with the COVID-19 morbidity and mortality of the Metropolitan Statistical Area where the audit client's headquarters are located, due to the effects of the pandemic on auditors' risk-averse attitude.
Stuart et al. (2024)	<i>Journal of International Accounting Research</i>	Ghana and Norway	Interviews	
Wang et al. (2024)	<i>International Journal of Disclosure and Governance</i>	USA	Archival	

IV. The Impact of Crises on Stakeholders in the Capital Market

The impact of COVID-19 on the quality of information flowing into the capital market is relevant for stakeholders (e.g., analysts and investors). Hategan, Curea-Pitorac, and Hategan (2020) point out that communication with investors during the COVID-19 pandemic was affected by physical distancing, which required shareholders' meetings to be online. Based on a sample of 95 firms listed on the Egyptian stock exchange (EGX), Badawy (2021) finds that the timeliness of limited review reports is positively and significantly associated with investors' perceptions of the quality of financial reporting. Investors particularly appreciated and valued the timeliness of financial statements and the limited review report during the COVID-19 pandemic crisis.

Investors rely on analyst forecasts for investment decision-making (Hirst, Koonce, and Simko, 1995; Schipper, 1991). As the capital market's information intermediaries, equity analysts interpret public information relating to companies, industries, and the economy and produce private information that is useful for forecasting the future earnings and stock prices of the firms they follow (Bradshaw, Lee, and Peterson, 2016). Using a sample of US-listed firms from March 2019 to February 2021, Hao, Xue, Yau, and Zhang (2022) find that analysts issue timelier, more frequent, but less accurate forecasts in the period after the COVID-19 outbreak than in the pre-pandemic period, indicating that analysts responded to investors' intensified demand for information during the pandemic, even as the high uncertainty caused by the pandemic increased forecasting difficulty.

V. Conclusion and Future Research Opportunities

Early evidence in the emerging literature suggests that COVID-19 negatively affected the quality of financial reporting, disclosure, and auditing, largely due to disruptions caused by the shift to remote work. Much of the current research relies on surveys and interviews grounded in practitioners' subjective experiences, often emphasizing challenges such as compromised audit evidence, increased audit complexity, and weakened financial reporting processes due to remote work and uncertainty. In contrast, archival studies that measure actual outcomes—such as accruals, restatements, and audit delays—present a more nuanced view: while some document declines in quality, others highlight firms' and auditors' adaptations, such as improved transparency and the maintenance of standards. As a result, qualitative methods tend to underscore perceived disruptions, whereas archival methods reveal some balance between vulnerability and resilience. To develop a clearer and more comprehensive understanding, future research should triangulate qualitative

findings with objective archival evidence across diverse institutional settings and various crises.

Looking ahead, future archival studies could focus on five key areas. First, future studies can examine how COVID-19 affected financial reporting quality (using various archival measures such as earnings response coefficients, accrual quality, and restatements), internal control weaknesses, and audit quality (measured by audit fees, audit delays, and going concern opinions), while also considering the moderating effects of industry membership and institutional factors such as a country's shareholder protection, investor activism, and litigation risk. Second, they can explore moderating factors such as auditor characteristics (firm size, industry specialization, digital literacy), management background (CEO/CFO education and experience), corporate governance structures (e.g., audit, disclosure, or risk management committees), and external monitoring mechanisms (e.g., institutional ownership, analyst coverage, industry regulation). Third, they can investigate how COVID-19 influenced non-financial disclosures, including environmental, social, and governance (ESG) reporting and climate-related disclosures. Fourth, they can apply textual analysis to assess shifts in the tone and content of financial statements and audit reports during crises. Finally, future studies could conduct comparative analyses across different crises—such as COVID-19, the global financial crisis, and trade tensions—to identify how various types of disruption uniquely affect financial reporting, disclosure, and audit quality.

In selecting methodological approaches, future researchers should align their choices with the nature of their research questions. Qualitative methods, such as surveys and interviews, are well-suited for exploring practitioners' experiences, perceptions, and the nuanced challenges that arise during crises, though they may introduce subjectivity. Archival methods offer objective, outcome-based evidence that can enhance the generalizability of findings across different contexts. To strengthen the robustness of conclusions, future studies should seek to triangulate qualitative insights with archival evidence and extend their analyses across different countries and various crises to fully capture the evolving complexity of financial reporting and audit practices under uncertainty.

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