

The Reliance on Computer-mediated Communication by Audit Firms During the COVID-19 Pandemic Period

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ABSTRACT

The onset of the coronavirus pandemic 2019 (COVID-19) resulted in audit firms relying on Computer-Mediated Communication (CMC) when communicating with their clients. Although most audit firms employed CMC to some extent before the pandemic, their use of it increased with the onset of the pandemic because of the prohibition of face-to-face communication. This study aims to discover how auditors used CMC during the pandemic, and in particular, which CMC tools were used most frequently. While the shift to CMC during the COVID-19 pandemic was mandatory, its increased use is expected to influence audit firm adoption of CMC following the pandemic period. Thus, this study also investigates this intention for continued use and how it varies with audit firm size. Finally, the study investigates whether audit firm size affects the cooperation between auditors and their clients when employing CMC. Based on both interviews and survey evidence, the use of CMC is found to be more pervasive after the pandemic than before it. Further, smaller audit firms expect to rely more than bigger audit firms on CMC following the COVID-19 pandemic. Finally, the study revealed that the clients of larger audit firms are more cooperative when auditors communicate with them using CMC during the pandemic than is the case for smaller audit firms. These results should be of significant interest to audit firms, especially smaller firms that may decide to invest more in CMC following the COVID-19 period. In addition, regulatory bodies should provide more detailed guidance to audit firms in terms of their use of CMC technologies.

Keywords: CMC, Audit firm size, COVID-19.

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الاعتماد على التواصل بواسطة الحاسوب من قبل مكاتب المراجعة خلال جائحة كورونا

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ملخص

من أبرز نتائج جائحة كورونا اعتماد المراجعين على الحاسوب خلال تواصلهم مع عملائهم. بالرغم من تواصل أغلب مكاتب المراجعة مع عملائها بواسطة الحاسوب قبل الجائحة، فإن التواصل بواسطة الحاسوب زاد خلال الجائحة نظرًا لمنع التواصل وجهاً لوجه مع العملاء. عليه، تهدف هذه الدراسة إلى الكشف عن كيفية تواصل المراجعين بواسطة الحاسوب خلال الجائحة، وخصوصاً الأدوات الأكثر استخدامًا. وعلى الرغم من أن التواصل بواسطة الحاسوب كان إجباريًا خلال فترة الجائحة، فإن من المتوقع أن تؤثر زيادة استخدامه خلال الجائحة إلى شيوخ استخدامه أكثر بعد الجائحة مقارنة بالوضع قبل الجائحة من قبل مكاتب المراجعة. لذا، تهدف هذه الدراسة أيضًا إلى تسليط الضوء على مدى عزم مكاتب المراجعة على استمرار استخدام التواصل بواسطة الحاسوب بعد الجائحة، ومدى اختلاف هذا العزم وفقًا لحجم مكاتب المراجعة. أخيرًا، تهدف هذه الدراسة لبحث مدى تأثير حجم مكاتب المراجعة على التعاون بين مكاتب المراجعة وعملائها عند تواصلها معهم بواسطة الحاسوب. بناءً على نتائج المقابلات والاستبيان، يمكن القول إن هناك زيادة في تواصل المراجعين بواسطة الحاسوب مع عملائهم خلال الجائحة مقارنة بالوضع قبل الجائحة. أيضًا تتوقع الدراسة أن مكاتب المراجعة الأصغر حجمًا سوف تعتمد نسبيًا أكثر على وسائل التواصل بواسطة الحاسوب بعد الجائحة مقارنة باستخدامها لهذه الوسائل قبل الجائحة. وأخيرًا، وجدت هذه الدراسة أن عملاء مكاتب المراجعة الأكبر حجمًا كانوا أكثر تعاونًا عند قيام المراجعين بالتواصل معهم بواسطة الحاسوب خلال الجائحة مقارنة بعملاء مكاتب المراجعة الأصغر حجمًا. هذه النتائج من المفترض أن تجذب اهتمام مكاتب المراجعة، وخصوصًا تلك الأصغر حجمًا، للاستثمار أكثر في وسائل التواصل بواسطة الحاسوب بعد الجائحة لرفع جاهزيتها لاستخدام هذه الوسائل بوتيرة أعلى بعد الجائحة، كما تقترح هذه الدراسة على الجهات التشريعية توفير دليل تفصيلي لمكاتب المراجعة يخص تواصلها بواسطة الحاسوب مع عملائها خلال مراحل المراجعة المختلفة.

الكلمات الدالة: التواصل بواسطة الحاسوب، حجم مكتب المراجعة، جائحة كورونا.

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1. Introduction

The coronavirus pandemic that first emerged in late 2019 (COVID-19) has had a pervasive impact on our lives, and the impact on the auditing profession is no exception (ACCA, 2020). In particular, the pandemic has impacted the interaction of auditors with their clients. Bauer et al. (2022) identified the virtual interaction between auditors and their clients as one of the four key changes in audit work during COVID-19, which requires further research. This interaction is not only an essential step towards accomplishing the auditing task, but it may also impact significantly the whole audit process. Hellman (2011) noted that both the audit and the audit methodology rely on the interaction between the auditors and their clients. Many studies highlighted the considerable impact of the nature of interaction between auditors and their clients on the quality of the audit process and therefore on the financial statements (e.g. Pentland, 1993; Gibbins et al., 2001; Arel et al., 2005). Conventionally, the interaction between the auditors and their clients occurs on a face-to-face (Malhotra & Morris, 2009) and daily basis during the audit process (Arel et al., 2005; Jin et al., 2022). Therefore, many audit firms intentionally locate their offices near their clients' premises. According to a recent study conducted by Beck et al. (2019), 80% of US client firms have their headquarters situated less than 100km away from the offices of their auditors. The literature noted the importance of having audit offices close to client premises, as the majority of the audit work performed is typically undertaken at a client's location.

However, there is an increasing trend towards auditors relying on Computer-Mediated Communication (CMC) in the interaction with their clients, including the interaction in the process of audit field work (Bennett & Hatfield, 2018) due to the advantages conferred by CMC. Such advantages include the facilitation of asynchronous communication,

travel cost savings, and the avoidance of schedule conflicts (Heller, 2010). Despite the efficiency and clear advantages offered by CMC, there are some concerns regarding the replacement of face-to-face communication with CMC (Bennett & Hatfield, 2018), particularly in relation to issues of diminished client cooperation and ease of relationship building (Westermann et al., 2015; Bennett & Hatfield, 2018; Saewitz & Kida, 2018). Although such issues have been investigated in previous empirical studies, such studies were based largely on experiments where the CMC setting was introduced and then compared with face-to-face communication. The use of such experiments enabled the investigation of issues that field or archival studies were not able to explore (Maines et al., 2006).

The setting of the COVID-19 pandemic period provides a unique opportunity for a field questionnaire study to investigate auditor use of CMC. According to Jin et al. (2022), the pandemic provides significant testing ground opportunities for many aspects related to remote auditing, including exploring the role of communication technology. While it was of course possible to compare the use of CMC by auditors *versus* face-to-face communication through experimental research approaches before the pandemic, such approaches may be biased, as auditors and their clients may behave in a contrived experimental setting differently from their normal behavior (Bauer et al., 2022).

During the COVID-19 pandemic, auditors had to rely solely on CMC for the first time (Ritonga & Suyanto, 2022). Although the big four audit firms (hereafter, big 4) had more experience than non-big four audit firms (hereafter, non-big 4)¹ using CMC prior to the pandemic, the onset of the pandemic

1 The big four audit firms are: PricewaterhouseCoopers (PWC), Deloitte, Ernst & Young (EY), and Klynveld Peat Marwick Goerdeler (KPMG).

necessitated the employment of CMC for all audit firms, regardless of their size (Sharma et al., 2022). According to Luo and Malsch (2020), reducing the physical presence of auditors during the pandemic led directly to the use of alternative forms of communication, such as videoconferencing. Thus, the public safeguarding strategies implemented as a result of the COVID-19 pandemic, such as lockdown and social distancing, have resulted in the replacement of conventional face-to-face communication with CMC in many work and social settings. This state-enforced environment provided an ideal opportunity for an examination of the use of CMC that is based on auditors' real-world experience rather than on experimental hypothetical scenarios that bring concomitant risks of research bias. According to Maines et al. (2006), a common problem when designing and executing research experiments is that the researcher may inadvertently lead participants to particular responses, warning that such experiments thus require extreme care by researchers.

In response to the pandemic, while auditing firms have adopted different strategies, such as solely relying on CMC in order to conduct their audit work, there remains a paucity of evidence examining the degree of success or failure of such strategies (Gong et al. 2022). Thus, it is important for studies, such as this study, to shed some light on auditors' experience of having to rely on CMC during the pandemic. Bauer et al. (2022) argued that we might expect a continuation of many of the changes to the audit profession that occurred during the pandemic. However, given the lack of evidence to support this assertion to date, the intention of auditors to continue relying on CMC after the pandemic remains an open question.

Moreover, while a number of recent studies investigated the practice of remote auditing during the COVID-19 pandemic (Bauer et al., 2022; Gong et al., 2022; Sharma et al., 2022; Ritonga and Suyanto, 2022; Albitar et al., 2020), none of them to date examined auditor reliance on CMC to communicate with their clients during that period. Further, Jin et al. (2022) argued that the impact of remote auditing on

the effectiveness of communication between auditors and clients remains unclear.

Therefore, the present study contributes to the existing literature in the following ways. Firstly, it examines the purposes for which CMC was employed during the COVID-19 pandemic. Secondly, it identifies which CMC tools were employed by auditors during that period. Thirdly, it investigates the impact of audit firm size on the intention for continued reliance on CMC following the pandemic. Finally, it analyzes the impact of audit firm size on the degree of cooperation between auditors and their clients.

2. Background and Literature Review

2.1 The Use of CMC during the Pandemic Period

The CMC revolution has had a pervasive impact on the audit profession over the past three decades (Janvrin et al., 2008; Kotb & Roberts, 2011; Dowling & Leech, 2014). Auditors communicate with their clients for a range of different purposes, including the holding of discussions or requests for the provision of data or documents. Auditors typically prefer to use e-mail as the main CMC tool for gathering evidence (Durkin et al., 2021). Bennett and Hatfield (2013) found that junior auditing staff tend to request more information by e-mail compared to face-to-face requests, explaining that such staff do so to avoid the uncomfortable social interactions that come with face-to-face communication with more senior client personnel. However, Saiewitz and Kida (2018) argued that any perceived advantages of this choice of CMC channel may be eliminated or even become a disadvantage, where bias emerges in the conduct of the communication.

In the pre-pandemic period, many accounting firms adopted CMC due to its flexibility and concomitant cost savings compared to more resource-intensive face-to-face communication (Brazel et al., 2004). Many factors have influenced the adoption of CMC,

such as audit firm size (Janvrin et al., 2008). Prior to the pandemic period, the use of CMC was necessarily limited, as auditing firms conventionally communicated with their clients on a face-to-face basis during the daily field work demanded by the audit process (Sorensen et al., 2021).

However, the pandemic brought with it the novel circumstance of audit firms having to rely solely on CMC due to the imposition of lockdown and social distancing measures by governments seeking to protect their citizens from the risks of COVID-19. While auditor reliance on CMC has increased for all communication with clients during the pandemic lockdown period, it is not clear for those employing CMC for the first time during the pandemic for which purpose the technology is employed. Bauer et al. (2022) concentrated on the operation of virtual audit teams that replaced face-to-face interactions between audit team members. However, their study focused only on the interaction between such team members and does not consider their interaction with audit clients. Therefore, the first aim of this study is to examine for which purposes auditors employed CMC during the COVID-19 pandemic period by addressing the following research question:

RQ1: For what purposes were CMC technologies employed by auditors using such technologies for the first time during the COVID-19 period when communicating with their clients?

2.2 Forms of CMC Used by Auditors during the Pandemic Period

Consistent with the development of IT over many years, CMC has evolved to take many potential forms. Media Richness Theory (MRT) argues that while the ultimate purpose of all CMC is communication, how this communication is undertaken varies. Drawing on MRT, Robert & Dennis (2005) argued that face-to-face communication is the “richest” form of communication in terms of the volume of information that is available to the receiver, as both parties communicate at the same time and place whilst transmitting body language. However, during

the pandemic lockdown period, this rich form of communication was not an available option for audit firms, resulting in the use of CMC to communicate with clients as an alternative. The forms of CMC vary according to MRT, such that video communication using media such as Zoom and Skype, is considered the second-best rich form of communication, as it allows for the sender and receiver to communicate at the same time whilst transmitting facial body language. While video communication lacks the advantages of physical proximity afforded by face-to-face communication, Bailenson (2021) argued that social presence is high in the case of videoconferencing. Indeed, he argued that social presence may in fact be elevated in videoconferencing compared to face-to-face communication due to the chat software functions that it affords, though he acknowledged that videoconferencing is limited to facial cues alone compared to facial-and body- language cues afforded by face-to-face communication.

MRT sees the third and least rich form of communication as written communication, including e-mails, given the absence of the benefits of synchronism and body-language cues. Gong et al. (2022:6) highlighted the significance of the method of communication between auditors and their clients during the pandemic, as it can “affect clients’ responses to auditors’ inquiries”, though they did not investigate the alternative communication methods in their study.

Given the relative merits of the different forms of CMC according to MRT, the second aim of this study is to investigate the different CMC tools employed by auditors during the COVID-19 pandemic period by addressing the following two questions:

RQ2: What forms of CMC did auditors employ more frequently when communicating with their clients during the pandemic period compared to the pre-pandemic period?

RQ3: What forms of CMC did auditors employ for the first time when communicating with their clients during the pandemic period?

2.3 Impact of Audit Firm Size on CMC Adoption After the Pandemic Period

The audit profession is characterized by firms of different sizes, being typically classified as either Big 4 or Non-Big 4. Important to the context of this study is that the size of an audit firm may influence its use of CMC. Zhu et al. (2003) noted that the size of an audit firm is frequently positively associated with technology acceptance and use. Extant literature documented a higher degree of use of CMC by Big 4 compared to Non-Big 4 firms (e.g. Janvrin et al., 2008). Many factors can potentially explain the greater propensity to adopt and use CMC in Big 4 audit firms. For example, such firms benefit from greater availability of human resources and capital compared to their availability in Non-Big 4 firms (Rosli et al., 2012). Further, the clients of Big 4 firms typically support more IT complexity, resulting in the need for such audit firms to adopt and rely more on IT (Lowe et al., 2018). In contrast, typically, smaller Non-Big 4 clients are less likely to have complex IT issues (Curtis & Payne, 2008; Rosli et al., 2012). Furthermore, Big 4 audit firms have a greater ability to purchase or even develop their own CMC technologies (Riemenschneider et al., 2003)².

Taken together, these factors resulted in a greater employment of CMC in Big 4 audit firms in advance of the COVID-19 pandemic period. However, during the pandemic period, and particularly during lockdowns, all audit firms, regardless of their size, were forced to complete their audit work entirely using CMC, as face-to-face communication with clients was prohibited. Given the greater adoption of CMC technologies prior to the pandemic in Big 4 audit firms compared to Non-Big 4 firms, the onset of the pandemic can be reasonably expected to affect the latter more than the

former given that they have less experience with CMC solutions in their auditing work. Non-Big 4 firms may well have to employ CMC technologies for the first time in their audit process, or at the very least will have significantly increased the use of such technologies in response to the pandemic environment given the benefits that they confer.

However, there remains an open question regarding whether the Non-Big 4 audit firms will continue using CMC to a greater extent after the COVID-19 pandemic than before it. Therefore, the following hypothesis is tested:

H1: The degree of increase in the use of CMC following the pandemic period in Non-Big 4 audit firms compared to before the pandemic exceeds the degree of increase in its use in Big 4 audit firms.

2.4 Client-Auditor Cooperation and the Impact of CMC

The cooperation between auditors and their clients is a key driver of audit effectiveness (Comunale et al., 2003). The provision of client information is an essential requirement for an audit, without which an audit is not possible (Schatzberg et al., 2005; Rennie et al., 2010). Therefore, an audit requires at least a minimum amount of cooperation between auditors and their clients, though the extent of cooperation can vary from one client to the next (Herda et al., 2014). Differences are expected to exist between Big 4 and Non-Big 4 audit firm clients when CMC use in the audit became mandatory during the COVID-19 pandemic. The clients of Non-Big 4 audit firms that were unaccustomed to using CMC before the pandemic, as discussed earlier, are as a result expected to be less cooperative compared to the clients of Big 4

2 During the interviews, a partner of one of the Big 4 audit firms revealed that his firm developed its own CMC platform before the onset of the pandemic.

audit firms, as the use of CMC by Non-Big 4 clients during this period may be viewed as norm-violating. The psychological theory on norm violations argues that adverse reactions may be predicted when a norm is violated (Brauer & Chekroun, 2005), including less cooperative behavior (Fehr & Fischbacher, 2004). Sprecher et al. (2016) argued that shifting from face-to-face communication to CMC may be considered a form of norm violation. However, over time, CMC users will become more accustomed to CMC and will thus overcome many of the challenges encountered during their initial use of this technology (Walther, 1992 & 1996). Saiewitz and Kida (2018) in their experimental study found that client responses are less cooperative when auditors ask for information *via* e-mail, though the authors did not distinguish between Big 4 and Non-Big 4 audit firm clients in their study. In addition, Gong et al. (2022) argued that the absence of face-to-face communication during the COVID-19 pandemic period can result in reducing the effectiveness of information exchange between auditors and their clients, thus highlighting the importance of cooperation between the two parties during that period to prevent a compromise of audit quality. The authors argued that during the pandemic, auditors relied on client-provided information rather than on information gathered directly by them during their work in person and on-site. Although Gong et al. acknowledged the importance of cooperation between auditors and their clients during the COVID-19 pandemic restrictions, they did not examine the degree of cooperation in their study. On the basis of arguments drawn from this literature, the following hypothesis is tested:

H2: Non-Big 4 audit firms experienced less client cooperation when using CMC compared to that experienced by Big 4 audit firms during the pandemic period.

3. Research Methods

This study investigates audit firm use of CMC as a tool to communicate with their clients during the COVID-19 pandemic period in the context of Saudi Arabia (SA) by

means of a semi-structured interview and survey approach. Investigating the use by auditor firms of CMC during the pandemic period can be considered an event study. Previous extreme events that demanded research attention in the auditing field include the impact of the collapse of the firm Arthur Anderson on the audit profession (Gendron & Spira, 2010) and audit firms' responses to the financial crisis (e.g. Humphrey et al., 2009; Sikka, 2009).

This research was conducted by adopting a mixed method approach which brings with it advantages compared to a single method approach. Jick (1979) argued that combining qualitative and quantitative methods should enhance the overall quality of the research conducted. Combining interviews with a survey is an established approach in auditing research (e.g. Schillemans et al., 2016; Khan & Islam, 2020), and will thus be employed in this research. While research studies usually rely on the extant literature to develop survey questions (Evans et al., 2015), the special nature of the COVID-19 pandemic and the lack of a body of research undertaken demand a different approach. Thus, the first stage was to interview auditors to determine how they used CMC during the pandemic period as a grounding exercise. This step was considered necessary given that it was the first time in the history that auditors were forced to rely solely on CMC when communicating with their clients. The extant auditing literature also relied on interviews to design subsequent survey questions (e.g. Khan & Islam, 2020). The interviews were designed to be semi-structured to allow interviewees to narrate their specific experiences (Thompson et al., 1989), particularly as their novel experiences in this setting are not documented in the existing literature.

Both the interviews and the subsequent survey, the latter being the second stage of the research, were conducted in the last quarter of 2020. During that time, SA audit firms were prohibited from communicating

with their clients on a face-to-face basis and instead had to employ CMC. The first stage of the research involved undertaking semi-structured interviews with three audit partners and three audit managers across a number of auditing firms³. These interviews were conducted by phone and notes were taken during the interviews by the authors. Questions were intentionally open-ended; for example, “What is your opinion regarding the use of CMC during the COVID-19 pandemic?”. The interviewees were also asked about their experience of using CMC with audit clients during the pandemic period, including the relative merits of CMC compared to face-to-face communication with clients. In addition, interviewees were asked whether they employed CMC for the first time in an auditing setting due to the pandemic. Finally, interviewees were asked to identify which forms of CMC they employed during the pandemic and to what purposes those forms were employed.

Based on these interviewee responses and the extant literature, a two-part survey was designed and sent online to auditors across a large sample of audit firms⁴. The first part

of the survey examined the experience of auditors using CMC during the pandemic period. Participants were asked to select all relevant answers that applied to them and were also offered the opportunity to submit their own response regarding the purposes to which CMC was employed along with the CMC tools used. The second part of the survey was designed to examine the study hypotheses by examining the differences in Big 4 and Non-Big 4 audit firms that responded. Using a seven-point Likert-type scale (ranging from 1 for “strongly disagree” to 7 for “strongly agree”), participants responded to the different survey statements in the survey. A total of 109 auditors participated in the survey. Table 1 provides background information on the respondents. The table shows that 73% of the participants were females and 27% of them were males. In addition, the majority of the respondents were employees of one of the Big 4 audit firms (56%), while 44% of them were employed by Non-Big 4 firms.

Table 1. The background of the survey respondents

Item		Number	%
Gender	Male	80	73
	Female	29	27
Firm	Big 4	61	56
	Non-Big 4	48	44
Experience	Less than five years	73	67
	From five to ten years	23	22
	From ten to twenty years	6	5
	More than twenty years	7	6
Age	21-29 years	69	63
	30-39 years	30	28
	40-49 years	4	4
	50-59 years	5	5
	Above 60 years	1	1

3 Each interview lasted around 30 minutes, and all interviews were conducted via telephone. During the interview discussions, the authors took detailed notes.

4 The survey was sent to 452 auditors and was completed by 109 auditors.

Rank	Partner	4	4
	Manager	10	9
	Auditor	53	49
	Assistance auditor	31	28
	Trainee	11	10

4. Results and Discussion

4.1 Interviews

The first stage of the study involved conducting interviews to examine auditors' experience of using CMC during the COVID-19 pandemic period and to discover any aspects as yet unexplored in the extant literature. Perhaps unsurprisingly, all interviewees stated that they had employed CMC with their clients before the onset of the pandemic and therefore, no respondents reported that they were forced to use such technologies for the first time. However, all interviewees revealed that their use of CMC had increased during the pandemic period. In addition, certain audit tasks, such as client meetings, were conducted for the first time during the pandemic as a result of lockdown and social distancing measures.

Although interviewees expressed concerns regarding the difficulties associated with building a relationship with their clients using CMC compared with conventional face-to-face communication, at the same time they acknowledged the benefits of CMC, including the time savings that it offered in terms not only of saved journeys, but also shorter meetings. Further, social conventions were also reduced when meeting with clients using CMC.

Another concern expressed by an audit partner in a local firm related to the assessment of clients' internal control which would in normal times be observed and assessed by auditors during physical visits to the clients' locations. Therefore, relying on CMC during the pandemic was considered by the auditors as a challenge when reaching a proper assessment of the internal control of clients, particularly in the case of small and medium client entities, where such control systems were typically unwritten. The same concern regarding client internal control assessment

was expressed by a Big 4 audit firm manager who perceived an inconsistency between what was written and what was actually undertaken by client firms. His concern again stemmed from the difficulty of using CMC to verify internal control systems compared to assessment during a physical visit.

Finally, COVID-19 appears to have encouraged many audit firms to adopt new CMC platforms. For example, a partner in one of the Big 4 audit firms stated that his firm commenced using a dedicated CMC platform to communicate with its clients, which enabled it to upload any required documents. While this particular platform had been built before the pandemic period, it was only rolled out during the pandemic.

4.2 Survey Evidence

4.2.1 Purposes for Which CMC Technologies Were Employed during the Pandemic

Table 2 presents the survey responses examining the different purposes for which auditors employed CMC during the COVID-19 pandemic period, in turn addressing research question RQ1. The table shows that the most frequent response to the purpose of the using CMC was "requesting supporting documents", with 42% of the respondents reporting using CMC for the first time during the pandemic period. Further, 71% of the respondents reported an increased use of CMC for requesting documents during the pandemic period. The reliance on CMC technologies to request supporting documents here highlights the need for robust IT systems specially designed to protect client confidentiality. Bujaki and Brouard (2021) argued that

stronger IT systems using virtual private networks and encrypted e-mails can improve client confidentiality.

In contrast, “meeting with a new client” was the least frequent of the purposes listed when using CMC during the pandemic period. While this result is inconsistent with the statements made by respondents in the interview phase, the

finding is most likely due to the mismatch in seniority rank between the survey’s participants (audit staff, the majority of whom held junior positions) and the interviewees (audit partners and managers)⁵. Indeed, meeting with a new client was usually a task reserved for senior auditors.

Table 2. The purposes for which auditors employed CMC during the COVID-19 pandemic period

Purposes of Employing CMC	For the First Time during the Pandemic Period		Increased Use during the Pandemic Period	
	N	%	N	%
Questions to verify information	40	37	71	66
Requesting supporting documents	45	42	78	73
Meeting with a new client	29	27	30	28
Meeting with existing clients	40	37	47	44
Clarify discrepancy or inconsistency	41	38	67	63
Enquiry about a particular accounting policy, such as allowance for doubtful accounts	31	29	49	46
Other	3	3	1	1

- This table shows the purposes for which auditors used CMC during the COVID-19 pandemic period.
- Respondents were asked to select the applicable answers.

Table 3 presents the survey responses to address research question RQ2 regarding which forms of CMC auditors used before the pandemic period that increased during the pandemic period. In addition, it addresses research question RQ3 by showing which forms of CMC were employed by auditors to communicate with their clients during the COVID-19 pandemic for the first time. The most common CMC tools employed by auditors for the first time during the pandemic period were Microsoft Teams (41%), followed by Zoom (21%). The significant employment of these two

video-communication applications resulted from the inability to engage in face-to-face communication during that period and thus the shift to the second richest type of communication tool according to MRT. Bujaki and Brouard (2021) argued that the enforced move to ‘working from home’ during the pandemic period resulted in many professions turning to video-conferencing applications, in particular when meeting with their clients.

⁵ While all interviewees were either audit partners or audit managers, 67% of the survey respondents had less than five years of experience in the profession.

Table 3. CMC tools employed by auditors during the COVID-19 pandemic period

CMC Tools	For the First Time during the Pandemic Period		Increased Use during the Pandemic Period	
	Number	%	Number	%
Phone	5	5	20	19
WhatsApp	1	1	11	10
Email	11	10	30	29
Zoom	21	20	13	12
Microsoft Teams	44	41	21	19
Office Platform	7	7	3	3

- The above table shows which CMC tools auditors used during the COVID-19 pandemic period.
- Respondents were able to choose answers that applied.
- Respondents identified Short Message Service (SMS), Face Time, and Google Duo as other CMC tools.

Table 3 illustrates auditors reporting that e-mail was the CMC tool with the most increased use during the pandemic period (29%), followed by the increased use of Microsoft Teams (19%).

4.2.2 The Impact of the Audit Firm Size on the Future Use of CMC Tools and the Level of Cooperation with CMC

Table 4 gives the mean response for all participating auditors along with the significance of the difference in responses between Big 4 and Non-Big 4 auditors. The table shows that most participating auditors expected that their use of CMC will increase following the COVID-19 pandemic

compared to before it. On a seven-point Likert-type scale, where 1 represents “strongly disagree” and 7 represents “strongly agree”, the respondents stated that their expectations of increasing their CMC use after the pandemic period was very high, as the mean response was 6.46. This expected increased use of CMC tools is most likely the result of their experience of the advantages of their CMC use during the pandemic period, which encouraged them to continue with its use thereafter. This result is consistent with Bauer et al. (2022) who identified many advantages of employing CMC, including the reduction of negative social cues, as well as saving both time and costs.

Table 4. Auditors’ views on the use of CMC

Statements	Mean Response (St. Dev.)	Big 4 vs. Non-Big 4
		Difference (P-value)
It is expected that the use of CMC will increase after COVID-19 compared to before COVID-19.	6.46 (3.60)	-1.74 (0.00)
Clients are less cooperative when CMC is used compared to face-to-face communication.	4.99 (1.77)	-0.58 (0.03)
Communication with clients using CMC is more comfortable compared to face-to-face communication.	3.79 (1.87)	0.07 (0.42)
It is better to gather data such as requesting documents using CMC rather	4.41	0.4

than face-to-face communication.	(1.82)	(0.12)
It is better to discuss an issue with a client using CMC rather than face-to-face communication.	3.26 (1.65)	0.01 (0.48)
Relying on CMC with clients during COVID-19 resulted in a negative effect on building relationships with them.	5.22 (1.38)	-0.7 (0.39)

- Respondents were asked to agree or disagree with the above statements using a seven-point Likert-type scale (from 1 = “strongly disagree” to 7 = “strongly agree”).

To test hypothesis H1, the differences in responses between firms by audit firm size are examined. The table shows that Non-Big 4 auditors are expected to increase their use of CMC following the pandemic to a greater extent than the Big 4 auditors, and this difference is significant at the 1% level ($p=0.00$), and thus, hypothesis H1 is supported. The difference is likely to be a result of the adoption status of CMC before the pandemic period with CMC more commonly employed in Big 4 compared to Non-Big 4 audit firms at that stage (Lowe et al., 2018). However, during the pandemic period, all auditors regardless of firm size were forced to rely on CMC, leading to more Non-Big 4 auditors experiencing the benefits of CMC for the first time.

To test hypothesis H2, the survey sought auditors' opinions regarding the degree of client cooperation whilst using CMC during the pandemic period and any differences by audit firm size. The table shows that Non-Big 4 clients were less cooperative than Big 4 clients when using CMC rather than face-to-face communication. The difference is statistically significant at the 5% level ($p=0.03$) and thus hypothesis H2 is supported. Less cooperation by Non-Big 4 clients is most likely explained by their lack of experience of using CMC tools before the pandemic period. Indeed, the sudden shift to CMC with the onset of the pandemic may be viewed by such clients as norm-violating, thus resulting in less cooperative behavior. This result is consistent with Ho et al. (2022) who observed a decrease in audit quality in Non-Big 4 compared to Big 4 audit firms as a result of the failure of the former to adapt to the sudden shift to remote auditing as

successfully and swiftly as their Big 4 firm counterparts. Francis et al. (2022) also noted that the negative impact associated with the lack of client cooperation on audit quality is more severe in the absence of face-to-face communication between auditors and their clients.

The table also reports auditors' opinions on other aspects of CMC use that have been investigated in the extant literature. The survey fails to find evidence that CMC is considered more comfortable compared to face-to-face communication, given that the mean response was only 3.79 on the seven-point Likert scale. Furthermore, auditors marginally prefer to use CMC for requesting documents (response of 4.41), though on balance they prefer discussing audit issues with their clients face-to-face rather than using CMC (response of 3.26). Bennett and Hatfield (2013 & 2018) also documented auditor preferences for CMC in the collection of documentary audit evidence, explaining such preference in terms of junior auditor staff reluctance to interact in-person with client management due to social mismatch issues⁶.

Finally, the table also reveals that most respondents strongly agreed on the negative impact of CMC when building relationships, with the mean response of 6.46; a result consistent with the findings of Bennett and Hatfield (2018) and Carlisle and Hamilton (2021). These two extant studies found that audit partners were concerned about the negative impact of CMC on junior audit staff and their reduced ability to develop

6 The social mismatch resulted from the differences between auditing staff and client management, the latter being typically older and with greater expertise and knowledge than the former.

relationships with clients due to the absence of natural face-to-face communication cues.

5. Conclusion

Good communication is a vital component of any auditing task. Conventionally, the communication between auditors and their clients occurred face-to-face, though over recent years, there has been greater interest in CMC technologies due to the advantages that they offer in terms of flexibility, as well as time and cost savings. Modern day audit firms use CMC tools, as well as face-to-face communication with their clients. However, the COVID-19 pandemic brought with it the novel situation, where, for the first time in history, CMC was the only tool permitted for communication between auditors and their clients. While the shift to CMC was mandatory during the pandemic period, its employment was expected to result in a step-change increased use in CMC due to its efficacy even after the restrictions were relaxed. Therefore, understanding the experience of audit firms in the use of CMC during the pandemic period is essential for an evaluation of not only this recent experience, but also the benefits associated with the future use of CMC.

The first aim of this study is to examine audit firms' experiences of using CMC during the pandemic period in terms of the purposes for which CMC was used, as well as identifying which particular CMC tools were employed. The study revealed a preference for video applications in the absence of face-to-face communication in audit work, a finding consistent with MRT, as such applications provide the "second richest" form of communication. In addition, the study found that audit firms intend to continue using CMC following the lifting of the pandemic restrictions, cognizant of the many advantages offered by CMC, a result particularly marked in the case of Non-Big 4 audit firms the CMC use of which was relatively modest in advance of the pandemic period. Finally, the survey found evidence of less cooperation from Non-Big 4 audit firm clients compared to

those of Big 4 firms in the process of communication between auditors and clients when using CMC during the pandemic period.

This research has some important implications for audit firms, and in particular for Non-Big 4 firms. The larger Big 4 firms were negatively impacted to a lesser extent than the Non-Big 4 firms by the forced shift to CMC in a number of respects, suffering less for example in terms of client cooperation. This finding is most likely due to the earlier adoption of CMC technologies by Big 4 firms to deal with clients in the pre-pandemic period. However, while both types of audit firms were obliged to adopt CMC with the onset of the pandemic, Non-Big 4 auditors experienced the biggest technology use shift, expecting to more significantly increase their use of CMC in the post-pandemic period compared to the pre-pandemic period. Thus, Non-Big 4 audit firms will need to invest more in CMC to insure its greater and more effective use following the pandemic period.

Common to all studies, this study is subject to some limitations, which should be considered when interpreting the results. Firstly, the study was conducted during the COVID-19 pandemic lockdown period. While this circumstance provided a novel opportunity to observe a wholesale shift from more traditional audit communication to the sole use of CMC, the nature of the pandemic itself and the involuntary shift to CMC may have to some extent influenced participant responses. Further, the study does not capture the holistic experience of audit firms in their reliance on CMC during the pandemic period, focusing solely on the purposes for which CMC was used, the tools employed, and broad perceptions of experience. However, this limitation provides an avenue for future researchers to investigate the broader context, including the impact of CMC on the required degree of audit skepticism during the audit process.

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