

REMOTE AUDITING AND ASSESSMENT DURING THE COVID-19 PANDEMIC IN NEW ZEALAND AND CHINA

Learnings from the food industry
and guidance for the future

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EXECUTIVE SUMMARY

This report presents results of a study into the use of remote auditing and assessment during the COVID-19 pandemic. The empirical evidence was collected through interviews with a group of key stakeholders who were all involved in remote audits and assessments (firms, auditors/conformity assessment bodies and accreditation bodies). A total of 60 interviews were conducted with respondents based in New Zealand, China and Australia.

The findings are discussed in four areas: audit process, use of technologies, data protection and privacy and effectiveness of remote audits and assessments. The report also discusses key opportunities and challenges related to the adoption of remote audits and assessments and, in doing so, provides information to underpin the transformation of auditing practices.

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Follow-up questions:

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Contents

1.	Introduction and Objectives of the Study	3
2.	Use of Technologies in Auditing	4
3.	Method	6
4.	Findings – Remote Auditing in New Zealand	8
4.1	Use of Remote Audits Prior to the Pandemic	8
4.2	Experience with Remote Audits During the Pandemic	9
4.3	Audit Process	10
4.4	Use of Technologies	13
4.5	Data Protection and Privacy	15
4.6	Effectiveness of Remote Audits	16
5.	A Future Outlook: Opportunities & Challenges Associated with Remote Audits	19
5.1	Opportunities	20
	• Adoption of a Pre-Audit Remote Analysis as a Practice	
	• Alignment of Auditing with Technological Capabilities of Firms	
	• Development of Hybrid Auditing Models	
5.2	Challenges	21
	• From Remote Audits to Technology Enhanced Auditing	
	• Auditors’ Skills and Training	
6.	Conclusions	23
7.	References	24

1.

Introduction and Objectives of the Study

Conformity assessment services (testing, inspections, and certifications) play an important role in ensuring that consumers, suppliers and other stakeholders have confidence in the safety and conformity of products being produced. For assessment purposes, conformity assessment services traditionally used on-site audits, however, during the COVID-19 pandemic, remote 'audits' became the 'new reality'.

In the light of on-going travel restrictions, increasing costs and ever-increasing expectations around product safety, an opportunity exists for the on-going use of remote audits or assessments as well as the use of technologies to facilitate and improve food safety through conformity assessment.

In this report, we capture the learnings from firms, auditors, conformity assessment bodies and regulators of audits and assessments conducted during the first 18 months of COVID-19 pandemic. We interviewed 40 stakeholders (60 interviews in total - some respondents were interviewed in two rounds) about their perceptions of the on-going feasibility of remote audits and remote assessments. Our respondents were based in either New Zealand, Australia or China, with most operating on a global scale. Food supply chains provided the context of our research.

The learnings are presented in four areas: audit process, use of technologies, data protection and privacy and effectiveness of remote audits and assessments. In each area, we provide an overview of our key findings and provide illustrative quotes from the respondents (all quotes are anonymous and represent the personal viewpoints of the respondents). We also discuss key opportunities and challenges related to the adoption of remote audits and assessments and, in doing so, provide information to underpin the transformation of auditing practices in the food industry.

2.

Use of Technologies in Auditing

Remote audits use information and communication technologies (ICT) to gather, store, retrieve process, analyse, and transmit information (ISO19011, 2018). Remote audits essentially replicate on-site audits. Prior to the COVID-19 pandemic, remote audits were offered on a relatively small scale (e.g., remote verification of food businesses, MPI) or as part of contingency planning (e.g., as specified in IAF Informative Document for Management of Extraordinary Events - IAFID 3:2011). In this study, we define remote audits and assessment in the following way:

- Remote Audit – the facilitation of an audit of a client by an auditor (representing a Conformity Assessment Body), who is not physically on-site.
- Remote Assessment - The facilitation of an assessment of a Conformity Assessment Body by an Accreditation Body, which is not physically on-site.

Prior to the COVID-19 pandemic, technology-enhanced auditing (TEA) had been gaining attention (Gale et al., 2017, Castka et al., 2020b). TEA uses a broader set of technologies that go beyond ICT (e.g., sensors, DNA testing, artificial intelligence, satellite imaging, and IoT) to improve the veracity and timeliness of audits. For instance, DNA testing has been adopted in ‘ocean to plate’ traceability systems to improve the veracity of chain of custody audits and to combat food fraud (Anderson, 2016) and some fisheries use on-board cameras, which allow for live streaming of activities to improve timeliness of auditing. TEA extends on-site auditing processes and assists in auditor’s decision-making, such as the use of Artificial Intelligence (AI) solutions to assist auditors to analyse large volumes of data (PwC, 2018).

The distinctions and specifics of new forms of audits are summarised in Table 1. In this report, we focus on remote audits and remote assessments. In our conclusion, however, we also comment on hybrid forms of audits and the future of technology enhanced auditing.

During the COVID-19 pandemic, firms, supply chains, regulators and the public all rapidly learnt how to work remotely and how to use new technologies. A similar situation was observed in conformity assessment (Koch et al., 2021). Conformity assessment services had to become able to be delivered remotely. In many jurisdictions, conformity assessment providers were not considered ‘essential services’ and therefore had to find new ways to deliver their services. This context thus presents a unique opportunity to study the role of technologies in ensuring food safety in food supply chains – using remote audits.



	ON-SITE AUDITING	ASSISTED REMOTE AUDITING ¹	REMOTE AUDITING	TECHNOLOGY-ENHANCED AUDITING
APPROACH	Auditor determines compliance based on the evidence that is primarily collected on-site	Same as on-site; on-site auditor is assisted by technical experts or others that operate remotely	Technology is used to replicate on-site auditing	Technology is used to assist in auditor's decision-making
DATA COLLECTION	Data exchanged between clients and auditors on-site (e.g., review of hard copies, review of electronic files/databases, in-person interviews)	Data exchanged between clients and auditors on-site (e.g., review of hard copies, review of electronic files/databases, in-person interviews)	Data exchanged between clients and auditors remotely (e.g., review of scanned documents, review of cloud-based platforms, review of satellite imaging, interviews through video conferencing)	Data exchange amongst multiple parties exchanged remotely (e.g., review of cloud-based platforms, review of social media platforms, review of data collected by technology in real-time, interview through video conferencing)
TYPE OF TECHNOLOGY	Technology is secondary to the audit process (though it may be used to facilitate the process)	ICT used to communicate between on-site and remotely-based auditors	ICT, such as audit/video conferencing, screen sharing is used to replicate on-site audit	Various technologies (e.g., machine learning to identify patterns, make predictions, guide decision-making; sensors collecting real-time information) are used to assist an auditor with an audit
RELIANCE ON TECHNOLOGY	Low Audit can be essentially performed without technology	Low/Medium Remotely based auditors need to be able to connect with on-site auditors	Medium Relies predominantly on ICT; off-line (e.g., desktop review), or real-time (e.g., e-interviews) or a combination of thereof	High Audit relies on multiple technologies
AUDITOR COMPETENCE	Auditing competence (as specified in IAF Guidelines)	Auditing competence and ICT competence	Auditing competence and ICT competence	Auditing competence, ICT competence, and competence in Big Data Analytics

Table 1. Characteristics of On-site, Assisted Remote, Remote, and Technology-Enhanced Auditing (Castka et al., 2020a)

¹ Assisted Remote Audit definition by ASC: "An audit that is conducted partly remotely and partly on-site. It typically occurs when at least one auditor (not technical expert or interpreter) of the audit team is able to be on site while the rest of the team are not due to the travel restrictions. The remote auditor shall coordinate and guide the collection of evidence with the auditor on-site"

3.

Method

In this project, we adopted a qualitative methodology - the empirical evidence was collected through interviews with a group of key stakeholders who were all involved in remote audits and assessments. Table 2 provides an overview of key stakeholders, the rationale for their involvement, the number of respondents in each category, and the number of interviews.

We interviewed 40 participants over a total of 60 interviews. The interviews were conducted via ZOOM (occasionally via WeChat) between Nov 2020 and June 2021. The interviews were conducted in two rounds. The first round (between Nov 2020 and March 2021) served as a platform to develop a broad understanding about remote audits and remote assessments. Upon the conclusion of the first round, we produced a preliminary report, which was subsequently used as a discussion material for a second round of interviews with respondents who were asked to verify the findings in the report. During the second round of interviews, we captured respondents' additional comments, on the opportunities and challenges, which we have incorporated into this report.

The interviews were conducted either in English with New Zealand and Australian-based respondents or in Mandarin with Chinese respondents. Most interviews were recorded (with the consent of the respondents) and transcribed. Some respondents were not comfortable with us recording the interview – in these cases, we took notes during the interview. The interviews in Mandarin were transcribed and translated into English. Throughout this report, we use illustrative quotes from the respondents. Quotes marked as 'NZ' come from New Zealand and Australian respondents; quotes marked as 'C' come from Chinese respondents.

This project followed strict ethical rules. Prior to the commencement of the project, it was reviewed and approved by the University of Canterbury's Human Ethics Committee (HE 2020-69, August 18, 2020).



STAKEHOLDER CATEGORY	ROLE IN REMOTE AUDITING	IMPORTANCE FOR THE STUDY	NUMBER OF INTERVIEWS IN NEW ZEALAND AND AUSTRALIA	NUMBER OF INTERVIEWS IN CHINA
FIRMS	Firms subjected to remote audits/inspections/certifications during the pandemic	Firms provided feedback on benefits/problems related to remote audits (i.e., efficiency, resourcing, audit process, and similar).	10	2*
AUDITORS/INSPECTORS AND CONFORMITY ASSESSMENT BODIES (CABS)	Audits/Inspectors and CABS that they represent who conducted remote audits during the pandemic	CABs provided a range of services in the food industry that were conducted remotely (i.e., inspections, re-certification of facilities). Respondents from CABs (auditors or managers of CABs) provided broad perspectives about remote audits, from internal processes such as scheduling and auditor training to experience from remote audits of multiple clients across the food industry and other industry sectors.	14	6
ACCREDITATION BODIES	Accreditation bodies (ABs) were responsible for the integrity of conformity assessment. They also conducted remote assessments of CABS	ABs provided governance for conformity assessment and accreditation for CABs. ABs provided a broad perspective through their interactions with CABs. ABs also received feedback directly from clients and conduct witness audits.	6	1
			30	10

Table 2. Key stakeholder categories

NOTE: * Apart from 2 respondents from firms in China, 4 respondents accounted for as New Zealand/Australia-based respondents were part of New Zealand-China food supply chains

4.

Findings – Remote Auditing in New Zealand

4.1 Use of Remote Audits prior to the pandemic

- Internationally prior to the pandemic, documents by IAF and by standards setting organisations (i.e., ISO) had already incorporated key principles regarding remote audits and remote assessments into their guidelines and standards (IAF, 2015, ISO/IEC, 2017, IAF, 2018).
- Accreditation Bodies (ABs), Conformity Assessment Bodies (CABs) as well as the Ministry of Primary Industries (MPI) were also progressing, before the pandemic, with programs to introduce remote audits, albeit on a limited scale. For instance, some Conformity Assessment Bodies were accredited to provide remote audits as early as 2015 (both in New Zealand and China). Remote assessments were also being considered or were at an early stage of implementation. For instance, in New Zealand, ABs were progressing with a first four-year cycle to evaluate clients to whom remote assessments might be offered (as required by ISO 17011). This first four-year cycle was, however, not completed prior to start of the pandemic. MPI had also carried out some remote verifications prior to the pandemic.
- However, all respondents indicated that the uptake of remote audits and assessments prior to the pandemic was rather limited; they were typically reserved for audits of very remote areas with difficult access (NZ9, C1, C4) or areas with high risk (i.e., politically unstable regions NZ 15). The respondents generally agree that the uptake prior to the pandemic should have been faster - complacency in the industry being a typical explanation for their low uptake. Another reason for not using remote audits was the low cost of audits in some overseas markets, where auditors are relatively cheap. Several respondents indicated that remote audits were piloted before the pandemic but not necessarily used.
- Some respondents indicated that 'remote work' had been included in contingency planning prior to the pandemic but usually not remote audits. Frequently, the impact of a pandemic had not really been considered in contingency planning. As one respondent pointed out, "we had it all - but pandemic" (NZ14).
- Some progressive organisations were piloting various new technologies for auditing purposes with the aim to incorporate these technologies into their auditing process. Examples of technologies being assessed included pilot studies with Google glasses, wearable computers, camera systems, drones (C4), digital twins (NZ 19,20) or machine learning systems to analyse documents (NZ28). Mostly, these projects were and still are at the pilot stages.

"Look, to be perfectly honest with you. I think the certification industry generally always viewed remote auditing as being something to do when you just could not travel to the remote location. For example, in remote Australia, the flight in and out maybe two or three times a week. In order to do the audit, you need to set aside, maybe three or four days, only one day of which is an audit. I can think of at least one certification body that was offering remote auditing [prior to the pandemic], but it really wasn't something that the industry had embraced." [NZ18]

"There were almost no [remote audits] before the pandemic. We have helped some customers to do some remote audits, but they were experimental in nature. The audit results were used as a reference. [Remote audits] were mainly considered from a cost saving perspective, because many of our customers are abroad, and the cost of on-site audit is relatively high." [C8]

4.2 Experience with Remote Audits during the pandemic

- In both New Zealand and China, remote audits were used in similar ways across the food industry during lock-downs for both mandatory and customer driven audits. It was a steep learning curve for all major stakeholders. For instance, conformity assessment bodies (CABs) had to amend their internal processes and train their auditors to conduct remote audits; accreditation bodies had to train their assessors; firms had to increase their communication and cooperation with auditors and develop new competencies to manage remote audits. Of particular importance was the preparation of documents and records prior to audits and in interacting with auditors over ICT technologies.
- Scheduling of audits was difficult, especially initially, owing to the uncertainties about the duration of the lock-downs and ambiguity about the classification of conformity assessment (essential or non-essential service).
- The audit process changed dramatically: on-site interactions were practically nil and new ways to interact with clients and to review the documents and records were established. The main change was the focus on preparation and pre-audit analysis as well as the use of ICT technologies to replace on-site interactions.
- Technologies for remote audits were very rudimentary, such as MS Teams, ZOOM, WeChat; use of mobile phones (e.g., FaceTime) and use of cameras (e.g., portable, CCTV or use of sophisticated camera systems). The use of machine learning, AI, or other more sophisticated technological solutions was not reported.
- Data was being exchanged through various means, and there was a significant variation in these practices. At the basic level it occurred via emails, while at the advanced level it occurred via servers with password protected access (inclusive of fully traceable history of access).
- Remote audits were generally been received well and the respondents agreed that the integrity of conformity assessment was not affected during the pandemic. However, our respondents provide mixed opinions about the effectiveness of remote auditing.



4.3 Audit Process

- There are significant differences between the audit on-site process and remote audit process. Apart from the lack of on-site in-person interactions, remote audits put more emphasis on pre-audit analysis and preparation. Remote audits can be characterised as a continuous chain of activities that are conducted over a wide time frame (rather than being concentrated around the on-site visit; see Table 3).
- Preparation for remote audits is key and determines the success of the audit. This includes communications between auditors and clients with regard to the focus of the audit, preparation for and testing of technologies (i.e. ZOOM) and sharing of documents and records. The openness of the client is essential for a successful audit.

“We did a lot of preparation work before [the audit]. Basically, we got a list of documents that we should supply. So we prepared in advance. We basically created a system to facilitate the audit, which was very simple, very straightforward - tagged folders according to the requirements of the auditor... For [all our] audits, that was more or less the same... If you compare this audit to an audit that will be done on site, you need a wide team to facilitate that on-site audit. We didn’t have to include a wide team to facilitate [the audit], it was just few people that needed to clarify few points.” [NZ2]

STAGES IN THE AUDIT PROCESS	PREPARATION	PRE-AUDIT REMOTE ANALYSIS	AUDIT	AUDIT REPORT
TYPICAL ON-SITE AUDIT	On-boarding of a firm	Limited	Focus on all aspects of audit (document, review, review of records, on-site observations, interviews and collection of additional evidence); intensive on-site interactions between auditors and firms	Typically finalised on-site
TYPICAL REMOTE AUDIT	On-boarding of a client; submission of documents and records for review	Extensive review of documents and records prior to the audit, auditor can request additional evidence prior to the audit	Built on pre-audit analysis, the communication between auditors and firms in time blocks – allowing the auditor more space to analyse the evidence	Finalised remotely after the conclusion of all analyses

Table 3. On-site audits and remote audits – comparisons across the main audit stages.



“The remote audits started from documents review and expanded to use other technologies to conduct an audit. For example, if a processing plant or a factory already had its CCTV system – as a lot of them do have many fixed cameras monitoring what’s going on. And you can go to one point in their system and see all these screens where you can browse through them. And the idea was that as an auditor, you can be given access to that and then again, you can be guided through it by the [firm].” [NZ18]

“From my perspective, a remote audit is a tool to be used to compliment face to face audits and assessments. It does have more challenges that we need to work through; the key take home for us through doing some remote assessments out of necessity due to COVID was preparation. The success of the assessment at depended largely on the amount of preparation and material that had been supplied by the client ahead of the actual assessment day. And that was also a comment that I have received from a number of our clients as well that working together ahead of the assessment to provide material to be assessed on the day, was far more conducive to a timely outcome for the assessment. It takes far too long to do an assessment remotely via video conferencing or emailing and without having done a significant amount of preparation, ahead of the actual assessment day.” [NZ10]

“If the company is open, the effectiveness can be achieved. If some information (from site) is not clear, clients can [assist the audit] by taking pictures. The audit efficiency depends on whether the company is OPEN, and dare to show all the information to you and cooperate.” [C11]

- Determining the focus of the audit is essential. Firms need time to organize the documents and the records for the auditors; auditors need to analyse the documents and the records prior to the audit itself. The documents and records are shared through various means; i.e., sharing files, providing access to internal systems, or emailing documents.
- Apart from documents and records, firms can be asked to provide video footage of their facilities and/or particular processes before the audit or during the audit.
- The audit is usually conducted over ZOOM or Microsoft Teams. The audit is usually broken down into various segments; i.e., the auditor meets with clients, provides initial feedback, collects further evidence, the meeting is discontinued and the auditors continue with the analysis; the parties reconvene later and so on. Respondents report that the audit process needs to be balanced as prolonged screen time is unproductive and creates fatigue. Many auditors report that remote audits put more pressure on auditors than clients. There is no consensus on this point, however.
- Auditors have more privacy during the audit and can concentrate on the review of documents without interruptions that are typical during an on-site audit.

“The success of the case mainly depends on the cooperation of the [firm]. If the [firm] cooperates well, our audit will be smoother, the evidence collection will be faster, the completion will be better, and both parties will be more satisfied. If the [firm] does not cooperate well, the first is that it is difficult to obtain evidence; the second is that it is difficult to complete the audit within the specified time and it is difficult to achieve the target; and third, the audit team will find it tiring to communicate.” [C2]

“It’s quite a big undertaking for the assessors because none of us preferred to do audits remotely. We all prefer to go to site. It is much harder for us than for the clients, the clients are the winners. It is not that it’s much more difficult, it’s more time consuming and it’s really hard to concentrate and talk to a small video screen all day.” [NZ 10]

“During on-site audits, we may have one of the [firm’s employees] standing behind you, looking over your shoulder and they’re all there with arms crossed wondering what’s going on. Whereas, if you’re doing it prior [to the audit], you’ve got the opportunity to sit there in your own time at our own desk and go through it and make notes.

I think that this is something that we wouldn’t want to forgo when we get back to the conventional [auditing after the pandemic].” [NZ18]

4.4 Use of Technologies

- Rudimentary ICT technologies are typically used in remote auditing; mobile phones, ZOOM and Microsoft Teams are the most commonly used technologies to support the remote audit process in New Zealand, while WeChat is the most commonly used technology in China. These technologies are central for communication between auditors and firms.
- Respondents rapidly embraced these new technologies; especially ZOOM and Microsoft Teams and WeChat, which have been widely adopted. Respondents reported that the adoption of these technologies led to improvements in the effectiveness of communication and allowed for the adoption of remote practices. There was no agreement on which technology is the best or which should be used in the future (some respondents questioned the security of ZOOM and SKYPE and strongly supported Microsoft Teams).
- The exchange of documents and records happened through various means. At the basic level, emails were often used, especially for clients with low levels of digitalisation of their internal systems. For instance, many firms still rely on paper-based systems and scanning of the documents and records (NZ4). For remote audits, such firms had to digitalise their documents and records and submit them to auditors. Firms at more advanced level could provide the auditor with direct access to their management systems.
- Cameras (or mobile phones used as cameras) are typically used to provide further evidence for remote audits. The use of cameras can be in real-time (an firm employee holds a camera and communicates with the auditor through a 'virtual walk through') as well as retrospective (the auditor reviews the footage retrospectively). The resolution of images was an issue for some respondents. Some footage can be of high quality (e.g., GO PRO), while others can be of low quality (e.g., CCTV footage). Some facilities were already equipped with sophisticated camera systems that were embedded in their management systems and interlinked with the documents, records, and procedures. The accessibility of such systems increased the effectiveness of remote audits.
- The internet speed was an issue, not only in remote areas but also in urban locations. The internet speed is a particular a problem for remote audits that include multiple participants and with smaller firms who are not on high-speed internet. Respondents that operate globally reported similar problems across their networks, including in highly developed countries such as Japan. Despite these difficulties, auditors and clients coped well under the circumstances.





“If the auditor does have access to all the CCTV feeds while they actually doing the audit, they can actually monitor and get to see that not only the process on paper is fine, but is it actually being followed by the humans. I visited recently quite big dairy manufacturing plant and we were going through their systems of cameras and you can basically inspect every single part of the manufacturing process retrospectively.” [NZ14]

“We ask them to bring their mobile phones and videos to the site and through their devices, we can watch the scene based on [our requirements] - what we think are the key points (e.g., on-site operations, operating conditions, food control, warehouses, and laboratories).” [C8]

4.5 Data Protection & Privacy

- Participants had a good awareness about matters around data protection and privacy. In New Zealand, there was generally a high awareness of the Data Privacy Act 2020; however, the implications of the Act for remote audits were not fully understood. In general, participants indicated that they would appreciate more insights into the implications of Data Privacy Act 2020 on remote audits. The respondents reported that they had high levels of trust in how the data was handled during remote audits.
- Data Privacy was a significant issue for many respondents. For instance, firms were editing videos to disguise the staff that purposefully (or incidentally) appeared in them. However, this was not a uniformly adopted practice. Most times, a lack of capability (e.g., video editing), a lack of time to prepare for the remote audits or simply unawareness about data privacy, meant that some firms simply shared all the data in its raw state with their conformity assessment body. Some firms indicated that they were reluctant to share documents.
- There was a wide range of data sharing practices. Before the audit, documents and records were shared either via email, using SLACK, uploaded on a server or, in some instances, firms provided direct access to their management systems. On the conclusion of the audit, the expectation was that all of the shared data should be deleted. Though the respondents generally believe that it was the case, it is uncertain if this was really the case. The traceability of documents and records (uploading, downloading and their deletion) had been controlled in some instances (i.e., conformity assessment bodies have password protected servers with fully traceable history of access), yet not across the industry. This issue is seen as a risk for the future.
- In general, participants did not observe that the credibility of the assurance mechanism was compromised; however, there is a room for improvement.

“There is a risk to confidentiality in sending records from some [firms’] perspectives. So, they don’t want to send them to us. We ask them to show them to us at their place in order to see if the evidence meets the requirements.” [C10]

“[Data Protection] is a massive issue and it’s only been exacerbated by what we’re doing at the moment. Previously, under the conventional approach, we still did request documentation from a client. But that documentation was restricted to the assessor who was doing a documentation review, and that was the context of that documentation exchange was during the initial assessment of the certification body. Nowadays, we’re asking for a whole lot of data every single time we do assessment and it’s not only going to be accessed by one assessors, it is accessed by the whole team. Some of which are our employees using our equipment, some are contractors using their own equipment.” [NZ 18]

“That possibility [data leaks] will always be there and it comes down to the ethics of the actual auditor and the organisation. If the ethics are not up to a high standard, there is a very high possibility that there could be data leaks. ... I mean we basically frown upon sharing data with third parties. We have processes in place that if we do find out that something has happened, there is a full investigation done by the senior management and there are disciplinary actions.” [NZ14]

4.6 Effectiveness of Remote Auditing

- Respondents provided diverse opinions about the effectiveness of remote auditing, especially with regard to its overall cost, determination of non-conformities or its general suitability to support conformity assessment services.
- The variety in responses on the effectiveness of remote audits was, in part, driven by the large variety of audits conducted under the broad umbrella of conformity assessment (from management systems compliance to product testing, for example). The experience was also driven by contextual factors; such as the technological sophistication of facilities being audited or the level of risk involved.
- Firms in general preferred remote audits over on-site audits because it was less intrusive and the outcomes were the same.
- Some firms reported cost savings (largely due to cost savings for travel and accommodation). In contrast, other firms reported increased direct costs (i.e., higher charges from Conformity Assessment Bodies) and indirect cost (i.e., increased cost associated with time spend to prepare documents and further evidence such as video footage).
- Conformity assessment bodies and their auditors reported that they spent more time preparing for remote audits compared to on-site audits. Often, auditors needed to review more documents and records than previously (the challenge here is manage the time allocation well). The pre-audit analysis was reported to increase the focus of the entire audit.
- Evidence on the number of non-conformities found during remote audits compared to on-site audits was mixed. Some respondents estimated that about 25% fewer non-conformities were found during remote audits compared to on-site audits. Other respondents reported that a higher number of non-conformities were found due to more extensive document review. However, the respondents in general agreed that overall, remote audits picked up the most significant non-conformities.
- The interactions between auditors and clients during on-site audits provides a space in which to explain the situation and/or to provide extra evidence. In remote audits, it is often more difficult to achieve effective interactions. However, respondents from New Zealand or China reported that auditors and firms are improving their capabilities to interact.

“Some people are very encouraged [by the experience with remote audits], some people think that the efficiency is not good, and do not recommend it. We still don’t see what the future will be like.” [C10]

“The advantages of remote auditing – it can reduce auditor’s rushing through the audit and the [firm’s] expenses (travel expenses), consume less physical energy of the auditor. I personally think that as long as the risk is controlled, remote audits are very good. If customers are allowed to choose, most of them will choose remote audits because of lower costs. Remote auditing is of great significance in China.” [C4]

“You get the audit report with the audit findings and there are no travel expenses” [NZ12]

“I feel like more than 80% of clients like remote auditing.” [C2]



“Remote auditing is more efficient because you save you a lot of time for the audit tour, travel and you save a lot of time with [auditors]. I guess just by preparing the documents in advance and not doing it on the spot. When you have the on-site audit, they don’t prepare in advance. They come to site and they tell you, I need this, this and this and then the audit will focus with one employee on this system or will go for a plant to walk and then other team will start collecting the data. So, in case of remote auditing, we all focused on preparing the documents that they needed. And then they took a whole day just to review the documents and then during the other days, they asked us questions and we had few sessions. But overall, it was more efficient because we didn’t run around in circles to gather data at different times. It was preparation time and presentation time. That makes sense.” [NZ3]

“During remote auditing, we found that the time is not well controlled. In fact, some preparations must be made at the early stage, including firms preparing some materials and sending them to us for a review in advance.” [C1]

“The big ticket issues do get found [using remote audits]”. [NZ12]

- The level of IT sophistication (or more broadly, the quality of their management) influenced the effectiveness of remote audits. For instance, if a facility is equipped with a sophisticated camera system, auditors can review the footage in real-time or view past footage. Likewise, some firms have sophisticated quality systems, which are fully digital and enable an auditor access. In such instances, the preparations for the audit and the pre-audit analysis were less burdensome for auditors and firms alike. However, firms with low IT sophistication found that the preparation for remote audits was more demanding and that auditors spend too much time in pre-audit analysis.
- Perception about the effectiveness of remote audits was also driven by personal preferences of individual auditors and managers (e.g., some auditors preferred to work from home, hence they preferred remote audits; others preferred social interaction and hence preferred on-site audits).
- Remote audits increased the focus of involved parties on the audit itself. In part, this focus was created by the increased preparation required, as firms provided and organised the materials for the auditor and owing to the auditor analysing the materials before the interaction with firms. However, the increased focus on the audit resulted in less social interaction between auditors and firms during the audit as in general people felt less inclined to ‘chat’ over ZOOM, Microsoft Teams or WeChat.
- Respondents from both New Zealand and China reported that overseas audits were challenging; in part due to different time zones (especially an audit from Europe – as it is 12 hours difference from NZ or 8 hours from China), which impacted on staff availability (i.e., staff need to be present outside the regular working hours) and also in part due to language and cultural barriers.
- Remote Audits forced firms to keep their documents and records updated and encouraged them to revise and improve their management systems and record keeping. As the firms also had more flexibility in scheduling the audit, senior managers were more involved with remote compared to on-site audits.
- All respondents pointed out that further improvement in effectiveness could be achieved over time as the processes around remote audits develop and as the skills of auditors and firms to operate in this environment improve. Learning will occur across both sides and as firms use their experience across their facilities (NZ 22).

“The quality of the audited party (enterprise) directly affects the audit. Enterprise quality includes many aspects, hardware, software for communication used in the audit, whether the communication for remote audit can be achieved, network, software information maintenance department and personnel, employees’ IT skills. It is difficult to achieve remote audit [without these].” [C2]

“Well, I guess that’s an incentive for the [firm] to maintain their systems. So yeah, there’s probably a little bit more pressure to make sure that everything is prepared because you’re giving it to the assessor before the assessment, a lot more information, you’re given the assessor more time to look at it, and maybe more time to scrutinize it so that’s not necessarily a bad thing.” [NZ11]

“I think the more, the better we get at [remote audits]. So to be more effective, I think we need to do that how we organize that from a regulatory point of view. That is not up to the [firm] to direct it, it would come from the regulator. From a customer point of view, that’s totally a different matter. It’s probably more adaptable when we can discuss how we’d like to do things in the future.” [NZ4]

“It might take another year before we have completely comfortable with all facets of it. Particularly in areas which are difficult in auditing, such as the virtual walk-through and things like that. But we are getting there.” [NZ12]

5

A Future Outlook: Opportunities & Challenges Associated with Remote Audits

- During the pandemic, remote audits were introduced out of necessity. Learning from this experience is important in order to keep up the momentum and to maximise the opportunities from this experience.
- The impact of the pandemic on conformity assessment services is diminishing as more economies reopened – and so is the need for remote auditing and assessment. However, the demand for remote audits remains. Conformity Assessment Bodies (CABs) report an increased interest in remote auditing from clients. Likewise, some firms are making remote audits an internal practice and are developing capabilities to accommodate remote auditing in their management systems. Firms also report an increased push for remote audits from their customers, with some firms and CABs reporting a push for ‘livestream auditing.’ Governments and Customs Offices are also shifting their attention to remote audits. Clearly, remote audits are here to stay in some form or another. Respondents have, however, polarised opinions about the use of remote audits, especially in the food industry.

“National regulatory agencies are stepping up the formulation of rules to facilitate remote audits. This is what our certification department desperately hopes for. After the pandemic is over, remote audits may account for 30%-50%, and everyone will be very happy. Customers, who have undergone remote audits during the pandemic, will take the initiative to request remote audits from customer services when it comes to the audit this year. We are now rapidly improving data, and in the next 2-3 years, 30%-50% of remote audits will be reached.” [C4]

“Regarding the food industry, I estimate that in the future, the proportion of conformity assessment used for remote audit will not be very large, accounting for only a small part.” [C1]

“[REMOTE AUDITS] are not 100% compatible to answer it all but they definitely have a role in the whole scheme of things.... opportunity I guess that the last year has given us to explore it out a bit more, you know open your eyes bit more.” [NZ11]

5.1 Opportunities

Adoption of a pre-audit remote analysis as a practice

The introduction of remote analysis (or pre-audit analysis as per Table 3) during the pandemic is widely seen as a positive step in improving audits. Remote audits pushed all involved parties to 'try out' an alternative form of auditing. The benefits of pre-audit preparation and analysis was universally accepted. Firms, auditors and regulatory bodies should continue to explore options to embed pre-audit analysis in their everyday audit practice. Pre-audit analysis creates more focus and efficiency in the audit process. Some respondent stressed that the label pre-audit analysis (though widely used by respondents) could be misleading as the analysis is a part of the audit itself.

Alignment of auditing with technological capabilities of firms

The number of firms investing in the digitalisation of their document and record-keeping systems, automation, robotics, and other technologies is increasing. Remote audits have shown that these technologies can improve audits, yet their use had not been leveraged in auditing prior to the pandemic. During the pandemic, it was clear that highly digitalised firms could rapidly leverage their technologies to assist with remote audits. For example, it was beneficial to have access to sophisticated CCTV monitoring systems (allowing an auditor to remotely observe organisational processes) or internal document systems (allowing an auditor remote access to documents and records). A closer alignment with, and integration of, existing technologies presents a great opportunity to further enhance the effectiveness of auditing.

Development of Hybrid Auditing Models

Viewpoints on the use of remote audits in the post pandemic environment have shifted during this project. Due to lock-downs, the initial deployment of remote audits was seen as a replacement for on-site audits. The debate at the current time, however, is focused on which audits could be replaced with remote audits in the future, with the narrative being shifted towards 'how to combine remote and on-site audits' and 'which clients would be best suited for remote audits.'

The combination of remote and on-site audit is referred to as a 'hybrid audit.' Hybrid audits can take different forms and at the moment, the term does not have a very precise meaning. For instance, a hybrid audit might mean that the audit is divided into both on-site and remote parts. For instance, in a 5-day audit, an auditor might initiate the audit remotely, travel for a 2-day visit to collect evidence, and use the remaining 2 days for remote auditing. Even though there are no fixed rules in place, it seems that a hybrid form of audits presents a great opportunity to combine the 'best of the two worlds.'



5.2 Challenges

Enabling Wider Acceptance of Remote and/or Hybrid Audits

Remote audits present a great opportunity to improve auditing practices in food supply chains. However, the wider acceptance of remote audits relies on further developments and revisions of auditing practices, rules, and regulations.

The review of current auditing practices will have to address several important areas. Data security and privacy is one of the major areas to address. Respondents largely highlighted the risk associated with data privacy and urged further action in this area. More broadly, however, a review of the rules and providing more guidance on remote audits would be beneficial.

The effectiveness of remote audits is also an area that requires further scrutiny. More empirical evidence is needed to ascertain the benefits (as well as risks) associated with remote audits. For instance, assessment of the integrity of the auditing processes during the pandemic would require a much broader study. Likewise, further work is needed to determine the key factors affecting the effectiveness of remote audits. For instance, the pre-audit analysis stage in remote audits was often impacted on by a lack of standardized formats of documents (see the quote below). This is just one example that affects effectiveness of remote audits.

“I think, as I said before, regulator buy-in will be important ... so if you’re going to adopt any sort of hybrid program, you’d have to get a buy-in, I think, from the regulator.” [NZ11]

“The Chinese government may think that remote auditing is of little significance. We hope to use this method for customers [outside of China]. However, Chinese suppliers currently do not use remote audits. The number of clients using remote audits is still half and half. The pandemic in China has basically no impact on our operations at the moment, and remote audits have not yet been widely implemented. We only do remote audits for foreign customers.” [C8]

“As far as I know, due to the potential risk, food industry is very cautious on the use of remote audit. Although IAF WG has publish a new guide: Remote Auditing Activities for Accredited Food Safety Certification, many CBs still tend to use traditional on-site audits even if it means rescheduling their audit plan.” [C10]

From Remote Audits to Technology Enhanced Auditing

The use of rudimentary ICT during the pandemic was an adequate response, given the need to quickly develop remote auditing solutions. Though some of these approaches are well suited for auditing practices going forward, there has been also limitation around the use of technologies. For instance, auditors have been overwhelmed with the volume of records and documents. Some of these processes can be arguably automated; i.e., the use of machine learning and AI to scan the documents. We may also experience a more widespread use of drones and satellites to audit remote areas or geospatially challenging areas. We may also see more frequent use of robots. For instance, one respondent shared their experimentation with the use of robots for audits of food processing facilities. The use of these technologies is, however, in its infancy.

Auditors' Skills and Training

Dealing with remote audits during the pandemic was challenging for auditors. In part, due to deeply embedded auditing practices, in part due to lack of 'remote auditing skills.' Our respondents appreciated the efforts of all parties involved in audits and their ability to quickly embrace remote practices. At the same time, the future for auditors involved in conformity assessment will bring changes. An increased use of remote audits will decrease the pressure for travelling but it will also increase the pressure in terms of time scheduling and IT skills. Beyond the use of rudimentary IT, auditors of the future will need to develop mastery in handling AI, data analytics and to keep improving their skills to conduct remote audits.

“The test report was 850 pages and it was a scanned copy. So it was essentially a photograph. The auditor was completely frustrated because one of the ways to cut down time on searching through such a document is to pinpoint areas that you want to look at -through a set of keywords.” [NZ18]

“The auditors will continue to learn and improve their abilities. First, through the mastery of AI technology; second, improving the communication with the [firm]; third, appreciating that more problems can be found through AI. These are both new disciplines and new challenges.” [C10]

6

Conclusions

Global experience has highlighted that remote auditing is not a 'remote' possibility, reserved as a contingency mechanism, rather, it is an opportunity to transform traditional auditing practices into the era of smart technologies (Fischer, 2020).

In this report, we have helped to pave the way for future work in this domain by providing empirical evidence related to the use of remote audits during the pandemic. We have also listed key opportunities and challenges associated with the use of remote audits.

We hope that our report will provide a springboard for future adoption of remote audits and contribute to the improvement of audits in the food industry as well as other industries.

7

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