

Reflections on Remote Audit Practice in Accounting Firms

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Abstract. The audit profession has long been advancing the development of informatization and intelligent systems. As an important exploration of the digital transformation of the industry, remote auditing was comprehensively tested during the special period of the COVID-19 pandemic. Accounting firms that operate under explicit business deadlines, facing the enormous impact of the pandemic, made every effort to reduce the disruption to their engagements by using various remote technologies and means. Judged by the implementation results, remote audit technology has substituted only part of on-site auditing and is still constrained by many factors; the submission and disclosure of the 2019 audit reports were delayed to a certain extent. This has also triggered deep reflection within the industry on the application and deployment of digital information technology. On this basis, this paper starts from the audit engagements and the status of technology application of accounting firms during the pandemic, and attempts to provide more insights for the optimization of remote auditing and the digital and intelligent upgrading of the audit profession.

Keywords: Remote audit; Audit technology; Accounting firms; Digital transformation.

1. Introduction

1.1. Research Background

The COVID-19 pandemic broke out in full force during the 2020 Spring Festival holiday, exactly when accounting firms were intensively carrying out the annual report audits of listed companies. The ravages of the pandemic, together with the restrictions of prevention and control measures, obstructed the execution of on-site audit procedures: auditors could not timely perform inquiry, observation, inspection and other important audit procedures on the necessary personnel of the audited entity, and field procedures such as the physical count of inventories and petty cash were difficult to carry out. On major and critical matters, the efficiency of communication between auditors and those charged with governance was also affected, and the timely issuance of audit reports faced severe challenges. Under such difficulties, remote auditing seemed to have become an inevitable choice for advancing engagement progress.

Although the audit profession had long designed and planned the concept of remote auditing, judging from the situation of the industry, remote audit technology was in fact immature and lacked extensive application practice. The pandemic, as an unexpected event, created an accidental opportunity to test how practitioners apply remote audit technology. In March 2020, the Chinese Institute of Certified Public Accountants (CICPA) formulated remote audit guidelines and related risk reminders, and local institutes of CPAs also issued relevant guidance on carrying out audit work during the pandemic. In this major exploration of remote auditing, major domestic accounting firms provided a variety of audit work plans and technical guidelines, including the use of various communication technologies and the Internet for online remote communication and coordination.

However, remote auditing was launched under the impetus of the pandemic, an accidental factor; it had never before been applied to such a high degree, and given the question of the maturity of the technical means, did the actual audit process achieve a sufficiently satisfactory effect? This has also become the main question of concern in this paper. Therefore, this paper chooses to start from the remote audit practice of relevant accounting firms during the pandemic, evaluates it on the basis of summarizing the status quo of their remote audit practice, and attempts to provide more ideas and directions for the development of remote auditing and the digitalization of the audit profession.

1.2. Research Significance

(1) Theoretical significance. With respect to remote auditing, academia has already carried out considerable exploration. Combining theory with analysis, this paper conducts a case study of two firms, Ernst & Young (EY) and Rongcheng, hoping to provide further empirical support for existing research on remote auditing.

(2) Practical significance. The translation of remote auditing from concept to practice still awaits examination in terms of its concrete effects, and the impact of the pandemic has created a unique opportunity for studying remote auditing. By analyzing and evaluating the specific remote audit practices of the relevant firms, this paper provides a basis for judging the current application status and implementation effects of remote auditing in practice and puts forward related improvement suggestions, which is of practical significance for the digital upgrading of the industry and the standardization of remote auditing.

1.3. Research Methods

(1) Literature research method. Based on the collection, collation and analysis of literature related to remote auditing, this paper summarizes the relevant research results and establishes a reasonable research direction on the basis of a more objective and comprehensive understanding of the research object.

(2) Case study method. This paper adopts the case study method, and in combination with the remote audit practice of major domestic accounting firms during the pandemic, studies the issues of remote auditing and technology application; on the basis of summarizing the remote audit effects and existing problems presented in the cases, it puts forward related suggestions, in an attempt to make a certain contribution to promoting the construction and application of remote audit technology.

2. Institutional Background and Literature Review

2.1. Institutional Background

The audit profession began advancing the construction of informatization at an early stage, and the long-term achievements of informatization also provided a solid foundation for the formation of remote auditing. In 2011, the CICPA put forward the Overall Plan for the Informatization Construction of the Certified Public Accounting Profession in China, which regarded informatization construction as a strategic fulcrum for realizing the leapfrog development of the profession; it aimed to improve firms' internal management level, reengineer business processes, safeguard practice quality and enhance service value through the development and application of information technology, and the most important goal for firms was to build a firm business and management platform. In 2016, the CICPA issued the Informatization Construction Plan for the Certified Public Accounting Profession (2016-2020), which further proposed new ideas of intelligent application of industry informatization, holding that interconnection, mobilization and intelligence are the direction of future industry information systems, and that firms should focus on strengthening the construction of intelligent audit operation cloud platforms and intelligent internal management information systems. In order to further implement the industry informatization strategy of the 13th Five-Year Plan period, the CICPA issued the Work Plan for Promoting the Informatization of Accounting Firms in 2017, which clarified the respective responsibilities of the CICPA and accounting firms. It can be seen that, before the outbreak of the pandemic, the audit profession had in fact already carried out a fairly long period of informatization planning and deployment.

2.2. Literature Review

Although the concept of remote auditing was proposed at an early stage, its concrete implementation has not been extensive; in essence it lacks sufficient support of practical experience, and the related theoretical research is not abundant either. Existing studies mainly focus on

preliminary summaries of the advantages and disadvantages of remote audit implementation and its specific application.

(1) Advantages and disadvantages of remote auditing. Remote auditing emphasizes the off-site nature of audit work, namely the geographical separation between auditors and the audited entity. With the assistance of various information technologies, remote auditing can therefore better break through the geographical obstacles in traditional audit work. Under remote auditing, auditors can obtain electronic audit evidence and evaluate the accuracy of the audited entity's financial report data and the effectiveness of its internal control through information and communication technology and analytical procedures, thereby getting rid of the restriction of geographical location (Jin, 2019) [1]. Tian (2021) [2] pointed out that if an audited entity has relevant overseas institutions or branches, it is highly likely that an audit vacuum zone will appear due to geographical barriers, and therefore remote auditing needs to be reasonably used to obtain audit evidence efficiently.

The application of remote auditing has, to a certain extent, contributed to the improvement of audit efficiency. Chen (2004) [3] argued that when accounting firms use remote auditing in annual report audits, they obtain the original electronic data of the audited entity through audit data interface technology, and computer-assisted audit technology analyzes and evaluates the data, effectively improving audit efficiency. Teeter et al. (2010) [4] pointed out that remote auditing, by collecting audit data through information systems, can improve the efficiency of obtaining audit information and guarantee the normal implementation of the audit process. Zheng (2021) [5] pointed out that in an electronic data environment, auditors remotely obtain electronic audit data through information systems or other appropriate means and communicate with the audit object or other relevant personnel through network platforms, which greatly reduces audit costs and improves audit efficiency.

The deficiencies of remote auditing mainly concentrate on the reliability of the audit evidence obtained and the effectiveness of the execution of related procedures. When auditors implement remote auditing, most of the audit evidence obtained is stored in the form of data, so the sufficiency, appropriateness and reliability of such electronic information data may not be fully guaranteed (Zhao, 2020) [6]. Interviews or observation procedures performed by auditors through video communication technology cannot reveal the exact identity of the interviewee and the whole picture of the audited entity; and remote inventory observation by video makes it difficult to precisely measure or observe the whole warehouse with measuring instruments. Therefore, when implementing remote auditing, certified public accountants (CPAs) should not blindly execute it in order to save audit costs; they should reasonably judge whether the reliability of the audit evidence has been affected and effectively safeguard audit quality.

(2) Current practice of remote auditing. Combined with existing research, current remote audit applications mainly concentrate on remote data collection. Wang (2005) [7] pointed out that audit subjects can assist auditing through computer information technology, do a good job in collecting data and materials in an off-site manner, effectively integrate audit resources, and analyze data in a more scientific and precise way. Hu and Chen (2020) [8] studied the advantages and disadvantages of three active data collection tools, namely general database query, audit software collection and financial software export, against the background of the COVID-19 outbreak, and further proposed the idea of cloud computing data collection so as to overcome the restrictions of time, authority and professional technology in data collection. In addition, the study proposed that additional audit procedures should be adopted to ensure the reliability of remotely collected data.

Second, existing research has also put forward various technical ideas for the application of remote auditing. Hu and Li (2020) [9] proposed that, since the pandemic made it impossible for CPAs to carry out normal inventory observation of tangible assets such as inventories and fixed assets, remote online methods could be reasonably used to adjust the plans for physical asset counting and visits and interviews, so as to overcome the difficulties in audit work on the premise of ensuring audit quality. Shi (2020) [10] proposed that CPAs should selectively execute two audit procedures, namely remote video interviews and video inventory observation. When the identity of the interviewee is confirmed and the assessed audit risk is relatively small, CPAs may adopt video interviews, which save time

and transportation costs. When the physical assets subject to counting are managed in a relatively standardized manner, internal control operates effectively and there are no significant audit adjustments compared with prior years, CPAs may adopt video inventory observation to observe changes in the condition of physical assets, thereby saving audit costs. Zhang (2020) [11] emphasized the important position of audio materials in remote interviews and monitoring, pointing out that through remote video communication technology, the interviewee's facial expressions and body language can be reasonably recorded, and the reliability of the information provided by the interviewee can be judged through model analysis.

2.3. Literature Commentary

The main advantage of remote auditing lies in its ability to overcome geographical limitations and help CPAs remotely obtain electronic documents and data information of the audited entity. Due to the outbreak of COVID-19, CPAs were restricted from travelling to other locations, and remote auditing came to the fore, playing a certain role in ensuring the progress of engagements and improving audit efficiency; however, under the existing technical conditions and standards, the sufficiency and appropriateness of the audit evidence obtained through remote auditing remain open to question. When necessary, CPAs should still apply additional audit procedures to ensure audit quality.

3. Concept Definition and Theoretical Foundation

3.1. Definition of Remote Audit

Remote auditing is carried out on the basis of the traditional audit process. According to existing theories, it can be understood as an audit method whereby CPAs, without going to the office, production or business premises of the audited entity, instead obtain, through information channels such as network communication and with the use of informatization tools, including telephone, e-mail, voice and video tools, web conferencing platforms, data exchange platforms and audit software with remote functions, the electronic financial materials of the audited entity and other information materials related to the audit business, and communicate remotely with the audited entity, third-party units involved in audit evidence collection, regulatory authorities and other relevant personnel, thereby implementing part of the audit work.

Although remote auditing, carried out in combination with the traditional audit process, is not a completely new way of audit work, it cannot be understood as a simple combination of information and communication technology tools with traditional audit activities either; in fact, remote auditing requires the joint participation and support of all participants in the entire audit ecological chain to be effectively implemented.

3.2. Theoretical Foundation

3.2.1. Risk-Oriented Audit Theory

Modern risk-oriented auditing was formally established in 2002, emphasizing the core position of understanding the audited entity and its environment in the process of audit risk assessment. As the economy, society and business processes become increasingly complex, the results of assessing the internal and external operating environment of the audited entity appear increasingly important in risk assessment. Therefore, more and more accounting firms seek ways of in-process monitoring and early warning and of post-event multi-dimensional clue mining, so as to deeply assess the risks that may exist in the operating process of the audited entity.

3.2.2. Audit Expectation Gap Theory

The audit expectation gap is defined as the gap between the level of audit performance expected by independent auditors and that expected by users of financial statements. The formation of the audit expectation gap is mainly manifested in the following aspects: first, the lack of communication

between the public and auditors; second, differences in the performance of auditors. The audit expectation gap caused by the insufficient practice level of CPAs needs to be focused on and narrowed by the audit profession.

With rapid economic development, the business of audited entities has become increasingly complex, and financial data have developed on a large scale toward electronic digitalization and large-volume processing. In order to maintain the original audit quality, auditors have had to invest more manpower, material resources and financial resources. However, due to economic factors, human factors and other reasons, a contradiction arises between the practice capability of auditors and business needs, and the audit expectation gap becomes larger. In order to resolve the contradiction between the growth of business volume and the limited nature of audit resources and to narrow the audit expectation gap, the rational application of off-site audit technology to assist traditional audit technology in the execution of annual report audits and to improve the audit efficiency of firms has become an effective means.

4. Remote Audit Practice of Accounting Firms

4.1. Case Selection

In order to further analyze the application of remote auditing by major accounting firms during the pandemic, and taking the representativeness of the cases into consideration, it was decided to select the international Big Four firms and the top ten domestic firms for case analysis. By virtue of their huge business scale and rich accumulated experience, the international Big Four occupy an important advantageous position in the whole audit market and correspondingly are also relatively representative and pioneering in the application of various technologies and standards. Their response to the impact of the pandemic can, to some extent, reflect the situation of the audit profession in the application of remote audit technology and the handling of unexpected situations. At the same time, this paper also pays attention to firms that are somewhat less powerful than the Big Four but still occupy a relatively large market share in China. Therefore, this paper chooses to analyze the two types of firms in combination.

Based on the statistical results of Zhang Ying (2022) [12] on the use of remote audit technology by firms during the pandemic, and after comprehensively considering the technology application and the accessibility of relevant information, this paper selects EY, one of the Big Four, and Rongcheng, one of the top eight domestic firms, as case companies for analysis.

4.2. Introduction to the Case Firms

4.2.1. Ernst & Young

EY is one of the world's leading professional service organizations and, together with PwC, Deloitte and KPMG, is known as one of the Big Four accounting firms. Combining a global perspective with local service, EY is committed to providing high-value professional support for enterprises, governments and public institutions, while promoting industry innovation and the practice of social responsibility.

4.2.2. Rongcheng Certified Public Accountants

Rongcheng CPA was renamed by the former Huapu Tianjian CPA firm. It is a large accounting firm that has been established for more than 30 years and is specialized, institutionalized and internationalized; it is the only member firm in China's mainland of the RSM international accounting network, which ranks sixth in the world. Its business covers stock issuance and listing, corporate restructuring, enterprise reorganization, capital operation, financial consulting, management consulting and tax consulting, among other fields.

4.3. Remote Audit Practice at Ernst & Young

EY attaches importance to distinguishing and identifying data that support auditing, strives to build efficient and convenient tools and processes, and obtains data supporting audit purposes on the premise of ensuring data security and privacy, so as to ensure data standardization and further support the design and implementation of digital audit means. Through various means of independent research and development and cooperation, EY actively promotes the development and improvement of relevant tools and processes, which also provides a solid technical foundation for carrying out remote audit work during the pandemic as shown in Table 1.

Table 1. Automated tools used and under development at EY.

Tool category	Function	Status
Intelligent data import tool	Automatically obtains the data required for the audit; through parameter setting, extracts the data of a specified period/branch on a customized basis	Available
Confirmation robot	Creates, sends, recovers and tracks confirmations; the confirmation results reviewed by auditors are automatically uploaded to the audit platform as audit evidence	Available
Report checking robot	Achieves the extraction/conversion of the same data, checks and pre-prepares reports satisfying different accounting standards, and automatically generates difference reports for auditors to follow up	Available
Business-financial reconciliation robot	Identifies key information in documents by machine and automatically checks the consistency between business system data and ERP system data	Under development
Invoice review robot	Automatically identifies key elements of invoices such as number, code, date and amount, verifies them against the tax system, and supports export to Excel	Under development

Source: Compiled by the author from publicly available information disclosed by EY.

(1) Digital confirmation system. In August 2019, the confirmation website independently developed by the EY confirmation center was connected to the Confirmation e-Letter platform of the Industrial and Commercial Bank of China, and was put into trial operation at the end of 2019, successfully recovering digital confirmations. Using the digital bank confirmation business, auditors only need to perform simple operations on the confirmation website to receive the confirmation letter within 48 hours. Through this digital confirmation system, the confirmation processing mode has changed from offline decentralized processing to online centralized processing, realizing the whole online operation in the form of digital confirmations and eliminating cumbersome operations such as the verification of the three-party reserved seals and the courier delivery and receipt of confirmations. In addition, traditional paper confirmations require all confirmation content, such as deposit and loan interest rates and amounts, to be filled in, whereas digital confirmations only require the bank account number to obtain all the content of the reply, which is more convenient. According to relevant disclosures of EY, the digital confirmation system has compressed the internal processing time of banks from the original 10 working days to 30 seconds. Moreover, the digital confirmation reply covers all confirmation items and provides a QR code for self-service verification of authenticity (the electronic seal contains a unique document number), which is convenient for auditors to verify, reduces the degree of manual intervention in the process and effectively controls fraud risk. The pandemic posed certain challenges to paper confirmation work, whereas digital confirmation breaks through the limitations of space and time and combines rapidity with flexibility.

(2) Development of automated audit tools. Through the development of audit automation tools, EY supplements and perfects its audit operation platform, realizes the automation or intelligence of specialized audit functions, enables auditors to focus on risk and thinking, and improves audit efficiency and quality assurance; the development of digital tools also provides a solid foundation and advantageous conditions for the implementation of remote auditing.

At present, the automated tools put into use and under development by EY cover intelligent data import tools, confirmation robots, business-financial reconciliation robots, report checking robots and invoice review robots, among others. The use of the relevant tools during the pandemic enabled auditors to obtain relevant data at the first opportunity, carry out audit work as soon as possible, give full play to the advantages of remote auditing and ensure the progress of engagements.

4.4. Audit Practice at Rongcheng

With respect to the application of remote auditing, Rongcheng mainly focuses on optimizing the collection of relevant document information in the audit process. Rongcheng summarized six major pain points of remote auditing: when collecting documents and materials, the image documents taken are inconsistent in format and size; when files are too large, network transmission is slow and they occupy a large amount of space; images are tilted, blurred or missing and require repeated adjustment; the image collector cannot be recorded and modification records cannot be saved, so that it is difficult to identify the person responsible; the document review status, the specific reviewer and the records cannot be saved, which is not conducive to work allocation, tracking and re-review; and accounting vouchers and attachments such as invoices, reimbursement documents, bank receipts and contracts correspond incorrectly, giving rise to the phenomenon of a mismatch between vouchers and attachments. Where document collection is incomplete, repeated communication and confirmation with the personnel of the audited entity are required, which greatly reduces work efficiency.

In order to ensure the smooth progress of the annual report audit work, Rongcheng CPA, on the basis of optimizing its original financial shared service platform, made full use of information technology to optimize remote audit methods and launched an electronic voucher/image management system. Through scanned images and integrated data, the system can realize the electronization of all accounting materials, which strongly supports remote auditing and improves audit efficiency.

The specific operation process of the Rongcheng electronic voucher/image system includes the following three steps: enterprise personnel download and install the image system client, organize accounting vouchers, reimbursement documents, invoices and other documents, and upload them to the image system after scanning; auditors complete the review in the to-do list of the system and return attachments that are incomplete or unclear to enterprise personnel for resubmission or supplementary submission of images; during the review process, the system records the operator and operation time of image scanning, uploading, review, re-review, return, rescanning and supplementary scanning. When an image is deleted, the name of the operator and the operation time are permanently retained.

The launch of this electronic voucher/image system has, to a certain extent, realized the collection and transmission of information across locations; the relevant information is transmitted in a centralized manner to the audit engagement team in the form of images and electronic attachments, which realizes the complete and accurate collection and efficient transmission of information across locations and solves the bottleneck problem of cross-regional document transmission and review. At the same time, the immediate review and modification in the process of image information transmission also ensures, to a certain extent, the accuracy and completeness of the transmission of relevant documents. Rongcheng also pointed out that the electronic voucher/image system can also be used by enterprises for financial reimbursement; through the synthesis and aggregation of relevant electronic vouchers, it provides good support for financial work, which is a true reflection of how the digital achievements of Rongcheng benefit enterprises.

5. Evaluation of Remote Audit Practice

5.1. Overall Progress of Audit Projects

Judging from the current application of remote audit technology, EY mainly focuses on developing relevant data tools to assist audit work, mainly covering document information identification and data extraction and analysis functions, and strives to realize the automation of specialized audit functions

and improve audit efficiency. Rongcheng, for its part, focuses on the collection and standardized electronic integration of relevant audit evidence, strengthening the efficiency of obtaining relevant audit evidence from the source, which is convenient for the subsequent development of remote audit work.

In terms of effect evaluation, since neither EY nor Rongcheng disclosed the specific utility and results achieved by the relevant remote audit measures, and after considering the availability of relevant data results, in this chapter and the following parts, this paper chooses to cite the relevant survey statistics of the Central University of Finance and Economics to conduct a certain analysis of the current implementation effect of remote auditing. The survey covered 32 provinces, autonomous regions and municipalities directly under the Central Government; after excluding blank questionnaires and incompletely filled questionnaires, a total of 2,881 valid questionnaires were obtained. In terms of sample distribution, there were 386 respondents from international Big Four firms, accounting for 13.40% of the full sample; 897 respondents from the top ten domestic firms, accounting for 31.13%; 495 respondents from top 100 domestic firms excluding the top ten, accounting for 17.18%; and 1,103 respondents from firms other than the above, basically covering all types of domestic firms.

In terms of the specific engagement progress results, as shown in Fig. 1, the audit work progress of different types of firms presents relatively large differences; the proportion of delayed audit progress of the international Big Four is 51.55%, the lowest among all types of firms. Considering the long-term digital deployment and construction of the international Big Four, their application of remote audit technology during the pandemic alleviated the impact on the implementation of engagements to some extent, and this phenomenon is also relatively evident in the statistical results of firms' expectations regarding delayed audit reports. As shown in Fig. 2, only 10% of the international Big Four believed that a delay of more than four weeks was needed, and as firm strength weakened, the time by which audit reports needed to be delayed kept lengthening; more than 41% of all other domestic firms believed that audit reports would need to be delayed by more than four weeks.

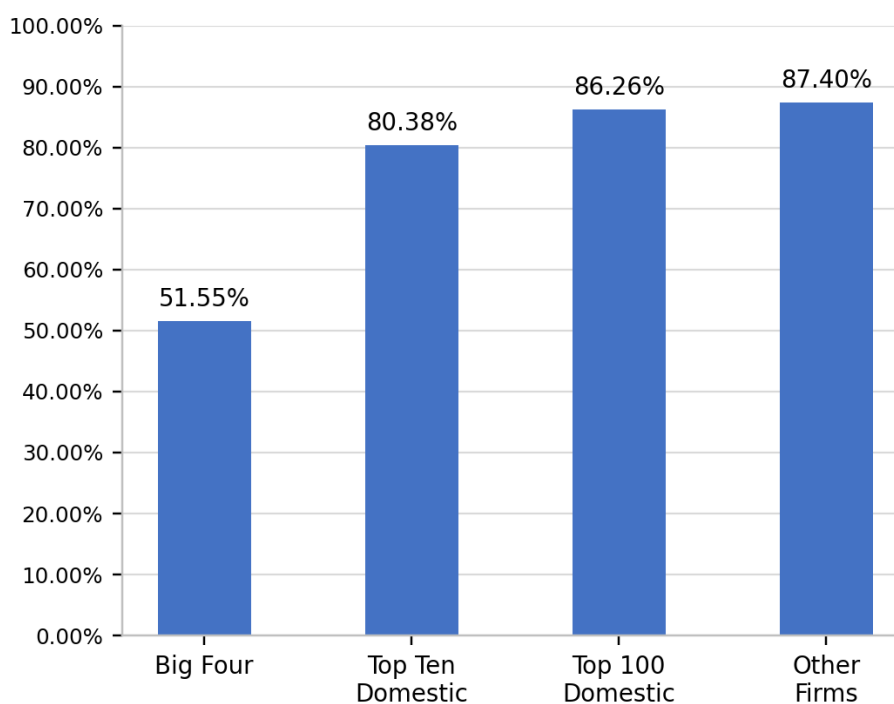


Fig. 1 Lag in audit work progress by type of firm.

Source: Compiled by the author based on Zhang Ying (2022) [12].

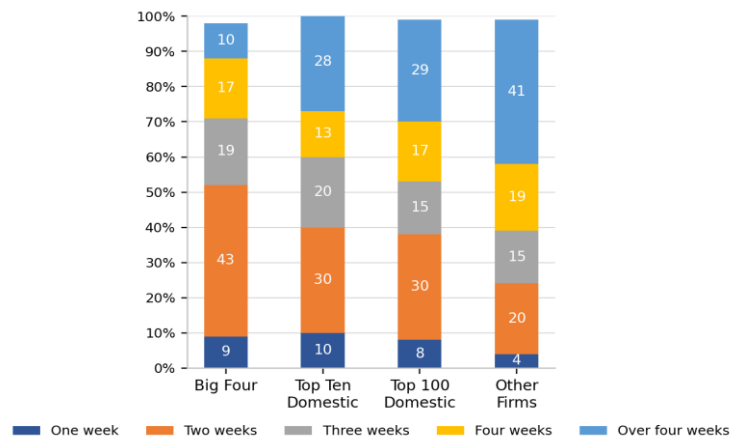


Fig. 2 Expected delay in the issuance of audit reports by type of firm

Source: Compiled by the author based on Zhang Ying (2022) [12].

5.2. Potential Problems of the Current Remote Audit

It is not difficult to find that, with the continuous spread of remote auditing, the audit projects of major firms all seem to show delays to varying degrees. Although remote auditing helps to relieve the work pressure brought by pandemic lockdowns, it is still constrained by certain realistic factors and cannot achieve perfect coverage of the whole audit process; the various problems reflected in remote auditing should also be taken seriously. [13]

(1) Doubts about the authenticity of the audit evidence obtained. When Rongcheng carried out remote auditing, it was mainly committed to realizing the electronization of relevant accounting materials, and from the usage process of its electronic voucher/image management system it can also be found that the electronization of relevant accounting materials currently requires clients to assist with scanning and other work, temporarily replacing the original link of direct person-to-person contact, so that it no longer possesses the on-site sense and authenticity of traditional auditing. At this time, the authenticity, reliability and completeness of the digital audit evidence obtained remotely may be open to question, and it is not yet known whether there may be situations in which clients tamper with the relevant document data or intentionally transmit information incompletely. On the other hand, remote auditing is highly dependent on the network, and the stability of the network and technical factors may affect the completeness of data, so the occurrence of partial data loss or omission is also difficult to avoid completely. Therefore, without the recognition and guidance of corresponding standards, auditors need to hold a higher level of professional skepticism than in on-site auditing, otherwise they will face greater detection risk; as for the evidence obtained by remote auditing, it may also be necessary to compare and verify it against the original physical documents subsequently.

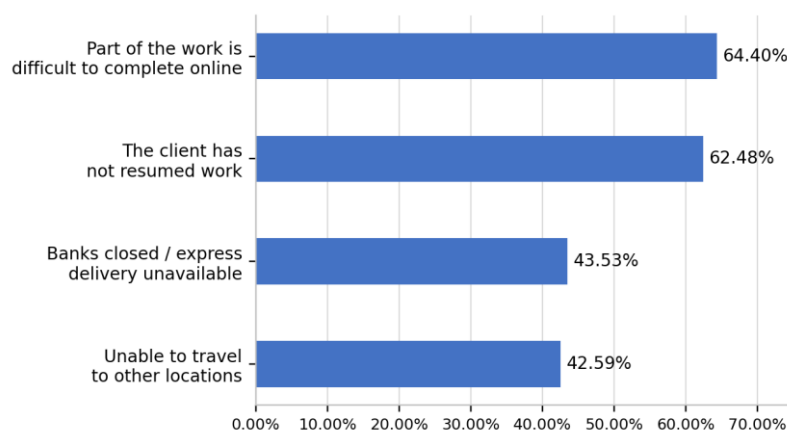


Fig 3. Reasons for the delay in audit engagement progress.

Source: Compiled by the author based on Zhang Ying (2022) [12].

As further shown in Fig. 3, among the reasons for engagement delay, part of the work being difficult to complete online accounts for 64.40%, the client having not resumed work accounts for 62.48%, banks being closed or express delivery being unavailable accounts for 43.53% and being unable to travel to other locations on business accounts for 42.59%, which again indicates that the substituting role of remote auditing for on-site procedures is limited.

(2) Constraints of the information technology conditions of the audited entity. In its remote audit practice, EY focused on using data analysis tools to complete audit assistance work, but the identification, extraction and verification of relevant data and the generation of relevant reports all depend on the relevant data of the audited entity. Therefore, in order to realize the timely acquisition of relevant data, the digitalization level of the audited entity appears particularly important. Considering that the digitalization construction of some traditional industries may not have kept pace in time, carrying out remote data identification and extraction work may then be full of difficulties or even impossible to perform. Therefore, whether remote auditing implemented by relying on data tools can achieve the results it should in fact depends to a large extent on the audited entity, which has also become a realistic condition affecting the development of remote auditing.

The survey results show that the industry in which the client operates has a relatively large impact on the progress of audit engagements. Where the audited entity has a high degree of informatization, remote auditing can play a partial substituting role for on-site auditing; for example, audited entities in Internet-related industries and the financial industry, which have massive transaction data, can provide complete transaction business system data and are suitable for remote auditing. As shown in Table 2, the proportion of delayed audit engagements is the lowest in the financial industry and in scientific research and technical services, whereas delays are serious in transportation, warehousing and postal services and in manufacturing. Therefore, under the sudden pandemic, industry characteristics will affect the progress of audit engagements: the lower the degree of informatization of an industry, the more difficult it is for remote auditing to replace on-site auditing, and the more the progress of audit engagements is affected.

Table 2. Impact of clients in different industries on engagement progress delay.

Industry of the client	Delay in work progress
Transportation, warehousing and postal services	85%
Manufacturing	82%
Agriculture, forestry, animal husbandry and fishery	82%
Health and social work	81%
Education	76%
Production and supply of electricity, heat, gas and water	75%
Information transmission, software and information technology services	73%
Mining	72%
Scientific research and technical services	65%
Financial industry	61%

Source: Compiled by the author based on Zhang Ying (2022) [12].

(3) Other on-site audit procedures are difficult to cover. Judging from the existing application of remote auditing, the relevant technical means are mainly used for the collection of raw data and materials. However, in audit procedures, the counting of the physical assets, investment properties and other assets of an enterprise cannot be ignored either. Procedures such as remotely inspecting physical assets, viewing document records and observing business processes and premises need to rely on the observation method. Although the application of online video technology is already relatively mature, considerable risks are hidden when it is applied to audit procedures, such as the audited entity being unwilling to cooperate or deliberately concealing part of the situation, and deviations in the effect of observation through the screen. Therefore, although some firms have adopted remote methods to implement procedures with strong on-site attributes, such as inventory

inspection, the practice community as a whole still maintains a relatively cautious attitude; at least with respect to such procedures, remote auditing has not achieved a real breakthrough.

6. Recommendations

6.1. Government Level

The realization of remote auditing requires the application of audit technology, and the corresponding institutional standards should also be further improved to strengthen the management of remote audit risks. In current remote auditing, most of the audit evidence obtained is stored in the form of electronic documents. With respect to such electronic audit evidence, the relevant departments should formulate more specific provisions in the auditing standards regarding its format, source, acquisition channels and methods, so as to give play a guiding role in audit practice. Second, the introduction of guidelines related to the data security of remote auditing should be accelerated to safeguard data security in the process of remote auditing. The security of the acquisition, transmission, storage and use of audit data is a problem that cannot be ignored in remote auditing. Subsequent auditing standards should also clearly specify the security definition of the platforms and tools used by firms for remote auditing, and strive to ensure the security, accuracy and completeness of the collection and acquisition of audit data.

6.2. Firm Level

(1) Strengthen the training of composite audit and technology personnel and improve professional competence. In an informatized environment, a large amount of audit data comes from the information systems of clients, and the auditors who execute the work need to have a certain understanding of knowledge related to information systems. As an off-site audit method, remote auditing places relatively high requirements on the experience and professional knowledge of auditors. Remote auditing requires the use of various data analysis techniques and big data to find rules in the data and finally determine the doubtful points that need to be resolved; therefore, auditors should change their audit mindset, learn audit methods under the remote audit model, fully apply the relevant audit technology means to audit practice work, and actively explore and accumulate experience in remote audit practice, so as to give play to the advantages of remote auditing and, to the greatest extent, use the remote audit model and methods to improve audit efficiency.

Firms should hire experts to regularly carry out staff training on the theory and practice of information technology, so as to improve the information-related knowledge reserves and application capabilities of employees. At the same time, they should establish an assessment of the level of information technology application and give performance rewards to employees who guarantee audit quality and improve audit efficiency through informatization technology in audit work, thereby providing motivation for the continuous improvement of the information technology level of auditors and the development of remote auditing.

(2) Refine the standards for business acceptance and client selection. While carrying out their own informatization construction, firms should not neglect the screening of clients; clients with a low degree of informatization will make it difficult for firms to fully implement remote auditing, thereby harming remote audit efficiency [14]. After a firm has invested a large amount of resources in informatization construction, if the business it accepts still comes from enterprises with a relatively low degree of informatization, it will be difficult to give play to the effects of its own informatization construction. Therefore, firms may consider first assessing the informatization level of clients at the stage of preliminary business activities and giving priority to accepting the business of clients with a relatively high degree of informatization, thereby raising the overall informatization level of the clients accepted and providing the necessary realistic conditions for remote auditing.

(3) Provide digital empowerment services for enterprises. In the remote audit practice of Rongcheng, the image/electronic voucher system, while helping the firm break through geographical separation to complete document collection, can also be applied to the financial work of enterprises,

optimizing the management and approval of vouchers and bills and improving work efficiency. From this perspective, the digital solutions output by firms can be circulated to enterprises, thereby effectively promoting the informatization construction of enterprises and enabling them to fully enjoy the achievements of digital transformation. It is believed that the continuous improvement of the informatization degree of clients will also create favorable conditions for remote auditing and achieve a win-win outcome.

7. Summary

As an important exploration of the digital and intelligent transformation of the audit profession, remote auditing was not promoted and spread on a large scale for a long period of time. Only the opportunity accidentally created by the impact of the pandemic pushed remote auditing to center stage. From the actual situation, the development of remote auditing in domestic accounting firms is still at the starting stage; although remote auditing has indeed alleviated the predicament of being unable to conduct on-site auditing to a certain extent, under the existing technical conditions and standards there still remain limitations such as doubts about the authenticity of audit evidence and a relatively high degree of dependence on the informatization construction of clients. Judging from the current audit situation, major firms still choose to adopt the on-site audit method, and remote auditing is, to a certain extent, more a product of a specific period; yet it cannot be denied that it has provided valuable practical experience for the digital transformation of the entire audit profession.

With the rise of emerging technologies such as artificial intelligence, big data and cloud computing, it can be reasonably expected that more audit technologies will emerge in the future, and then the efficiency and quality of audit work will also be further improved. Facing the new wave of technology, while continuously promoting the construction of digital systems, firms should not neglect the training of auditors in new technologies; they should help employees understand and recognize the digitalization process so that they can quickly adapt to new audit methods, improve the efficiency of audit work and fundamentally improve the efficiency and quality of professional services, thereby making good use of the advantages brought by technological development. What is more worth advocating is that firms can give full play to their own informatization construction and technological advantages to empower enterprises digitally, thereby truly realizing the co-construction of the participants in the audit ecological chain and contributing to the progress and development of the profession.

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