



# Study on Implementation of Digital Technology across Chinese Accounting Firms

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Joint Research – Full report

**iBSS**



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# Foreward

Digitalised audit is a key aspect of growth in the Chinese government's 14th Five-Year Plan, with both the government and industry supervising bodies proposing a series of digital and information-technology growth strategies and targets for the accounting sector. The digitalisation of accounting firms should raise the efficiency and quality of audit work, and foster greater risk-identification to improve audit in the digital era.

To this end, four key strategic targets were incorporated in the **Development Plan for Informatization of Accounting Sector in China (2021–2025)**, with an emphasis on improving governance. This holds important implications for promoting the use and development of digital audit tools. An article published in China Accounting News<sup>1</sup> also emphasised the importance of data quality and standardisation to audit quality. To repeat the point, for digital auditing to play a more significant role in governance, it requires high-quality data and applied data technology. For digital auditing to play a more significant role in governance, it requires high-quality data and applied data technology.

The purpose of this Research Study is to investigate the state of implementation of digitalisation strategies by accounting firms. We also set out to find how they invest in and apply digital audit tools, and how they leverage technologies to raise the efficiency, impact and quality of their audit work.

Through this study and analysis, audit professionals can learn from each other and elevate their service quality and governance. This should assist to improve the industry's professionalism and growth. This in turn should help audit firms keep pace with digital technology, increasing the relevance of their audit services.

## Background and methods

The Study is a joint initiative of Accounting Department of the International Business School Suzhou of Xi'an Jiaotong-Liverpool University (XJTLU) and CPA Australia. It commenced in May 2023 and consisted mainly of offline interviews and online questionnaires.

The part of the study involving online questionnaires was conducted between 29 August and 29 September 2023. A total of 905 accounting firm professionals in different regions of China and positions gave their feedback on the application of digital audit by junior accounting professionals. Those interviewed were mainly from East China (54.5%), North China (20.9%) and South China (12.3%), with the rest coming from Central, Western, Southwestern and Northeastern China and Hong Kong, Macao and Taiwan. Given that they were from all of China's major regions, the interviewees are considered as representative of China's accounting profession. In addition, the results of significance testing shows no apparent regional disparity to the views of the interviewees. In terms of job position, most interviewees (59.2%) were junior accounting staff, with 40.8% being senior accounting staff including managers and partners. As such there is adequate diversity in the population of interviewees.

During offline interviews, a team consisting of teachers and students from XJTLU and representatives of CPA Australia conducted one-on-one interviews with the partners and managers of nine accounting firms. The aim was to collect first-hand information and understand the strategic thinking behind the respective firms' push for digital audit.

The Research Study was compiled after consolidation of survey data and collation of interview texts. The accounting firms interviewed differed in size and background, since an objective of this Study was to collect views from a diversity of firms to arrive at a common, applicable conclusion.

<sup>1</sup> **Source:** "Digitalisation drives the advancement of accounting industry", published on 18 Feb 2022, by China Accounting News.

## About XJTLU

In 2006, Xi'an Jiaotong-Liverpool University (XJTLU) was created by the University of Liverpool and Xi'an Jiaotong University – a top ten university in China. Offering a unique international education experience, XJTLU brings together excellent research practice and expertise from both institutions and gives students the skills and knowledge they need to secure careers in the global marketplace. XJTLU has over 25,000 enrolled students in both Suzhou and Liverpool in the UK, with plans to grow to about 28,000 students by 2025. There are currently around 2,000 staff, including about 1,000 academic staff, with an almost even split between citizens of the People's Republic of China and international passport holders. XJTLU offers its undergraduate and postgraduate students over 100 programs with a diverse spectrum of courses.

XJTLU is entering a new and exciting phase of its development as part of its strategic priorities for the next ten years. Adopting a new higher education model based on the concept of Syntegrative Education (SE), XJTLU is currently opening a new Entrepreneurial Education site in Taicang, part of wider Suzhou, where the Entrepreneur College (Taicang) is located. The Taicang site will be a pioneer of, and educational model for, the future campus in addressing challenges arising from the 4th Industrial Revolution. Other new initiatives include new working partnerships with Xi'an Jiaotong University, the continued development of the four new academies, and exploration of further locations to develop the SE model.

With a focus on innovative learning and teaching, and research, XJTLU draws on the strengths of its parent universities, and plays a pivotal role in facilitating access to China for UK and other institutional partners. At same time, XJTLU is exploring future education by blending the educational theory, best practice and culture from west and east.

For more information about the university, please visit: [www.xjtlu.edu.cn](http://www.xjtlu.edu.cn).

## About International Business School Suzhou (IBSS)

International Business School Suzhou (IBSS) at Xi'an Jiaotong-Liverpool University is growing in size and influence in pursuit of its vision to be a leading international business school. The school is based on strong principles of internationalism, innovation, inspiration and integrity, which together ensure that we have a positive impact on society through our teaching, research and business engagement. In that pursuit, IBSS became the youngest business school to be accredited by the Association to Advance Collegiate Schools of Business (AACSB) in 2016, and again, the youngest School to receive EQUIS accreditation in 2018. Receiving joint accreditation of AMBA and BGA in 2020, IBSS became the world's 103rd triple accredited business school.

The five departments of IBSS are Accounting, Economics, Finance, Intelligent Operations and Marketing, and Strategic Management and Organisations with over 150 faculty members and more than 5,500 students from over 60 different countries. IBSS delivers a range of undergraduate, postgraduate, MBA, PhD and Executive Education programs across all major business disciplines.

The Department of Accounting became an independent academic unit with the beginning of the 2020/21 academic year, as a result of splitting the original Department of Accounting and Finance. At present, the Accounting Department has a team of 30 academic staff, publishing in high-quality international accounting journals and maintaining a balance of academic research and professional engagement. More than 80% of our accounting faculty members are affiliated with at least one of the following professional accounting bodies: AICPA, UK CIMA/ICAEW/ACCA, CA/CPA Australia, CICPA/HKICPA. Members of the department mainly teach the BA Accounting program and the MSc Professional Accounting program, and also support many other business-related programs. Our MSc Professional Accounting program has received professional accreditation from ICAEW. BA Accounting program has received professional accreditations from the CPA Australia, ACCA, CIMA and ICAEW.

## About CPA Australia

CPA Australia is one of the largest professional accounting bodies in the world, with more than 173,000 members in over 100 countries and regions, including more than 22,500 members in Greater China. We have offices in Beijing, Shanghai, Guangzhou and Hong Kong. CPA Australia provides thought leadership on local, national, and international issues affecting the accounting profession and the public interest. We advocate for policies that stimulate sustainable economic growth and have positive business and public outcomes. Find out more at: [cpaaustralia.com.au](http://cpaaustralia.com.au).

## Quotes from interviewees

Ranked according to surname

"Digital audit systems automatically identifies irregular data and is therefore helpful in high-risk areas."

– Deng Chuanzhou FCPA  
(Partner, RSM China)

"The views of digital audit are a result of human-machine collaboration. Iteration in today's technology does not alter the fact of human-machine interaction."

– Fan Wei (Chief Digital Officer, Deloitte/  
Leading partner, Data Analysis)

"Digital audit is all-encompassing and total. It is also an audit by the society."

– Fang Chongguang  
(Partner, Diacron)

"Digital audit increasingly needs inter-disciplinary talents who apart from financial and accounting knowledge also possess competence in IT."

– Jiang Wanying  
(Senior Consultant, EY)

"Audit reports cannot be jointly signed by humans and machines for machines are unable to assume responsibility."

– Li Ping FCPA  
(Equity Partner, BDO Shanghai)

"Digital audit is by no means capable of totally replacing traditional audit. It is merely a means of audit and one cannot entirely rely on it."

– Liu Yuehua  
(Partner, Shine Wing Suzhou)

"The level of application of digital audit depends on the level at which a client wishes to make available its data and the client's scale."

– Wang Chao FCPA  
(Managing Partner, PwC Suzhou)

"Digital audit has grown in leaps and bounds. It is an irreversible trend."

– Wang Chen FCPA  
(Partner, Pan-China CPA)

"Human judgment should still take precedence for high-risk matters in auditing. The computer serves to assist and cannot be completely relied on in exercising judgment."

– Wu Ying CPA  
(Head, Grant Thornton Shanghai)

# Executive summary

Through our online questionnaires and one-on-one interviews, we arrived at the following five key themes on the implementation of digital audit technologies by Chinese accounting firms:

## Theme 1: Analysis of state of application of digital technology in audit

**83.2%** of the online interviewees said their firm had already begun using digital audit technology. Of those firms that used digital technology, 76.0% of interviewees said their firm had developed proprietary digital audit platform or bought external audit software. Only 23.6% said their firm relied on MS Excel or mini-programs developed in-house in undertaking digital audits.

**55.1%** of those interviewed said their firm had developed a clear digitalisation strategy and implementation plan.

**86.7%** of the interviewees said the primary aim of digital audit is to raise the quality and efficiency of auditing in order to provide better quality audit reports to clients.

The most important digital audit technologies are artificial intelligence, analysis of social media, computer-assisted audit tools, and natural language processing in the six key phases of audit (client investigation and assessment, risk assessment, control testing, substantive testing, analytical procedures and audit opinion.)

## Theme 2: Analysis of clients applying digital audit technology

**Client industry:** Clients in data-intensive industry use digital technologies most frequently, especially those in the finance industry, followed by those in manufacturing, retail and service industries.

**Client scale:** Hyper-scale clients (with over 5,000 employees) show the greatest propensity to use digital technologies, followed by large clients (employing 1,000 to 4,999 workers) and medium-size clients (employing 500 to 999 workers.)

**Client type:** For profit enterprises (including state-owned and private enterprises) use digital technologies more frequently. They are also more willing to accept digital audit. Not-for-profit organisations and government units tend to have a lower level of acceptance of digital audit technology.



## Theme 3: Analysis of effect of implementation of digital audit

**Audit efficiency and quality:** By increasing the efficiency and accuracy of audit and reducing human errors and bias, digital audit is capable of improving audit quality.

**Audit cost and fee model:** Digital audit can reduce the cost of audit through increasing work efficiency. However, the development of digital audit platforms and its maintenance would require significant amount of investment, as would recruitment of new employees competent in IT and their training. Therefore, it is necessary to carry out comprehensive cost-benefit analysis. At present digital audit has limited impact on the fee structure for audit services.

**Firm's human resource capital and plan:** Inter-disciplinary accounting talent that possess digital technology skills are well sought-after. There will also be a reduction in the number of workers conducting low-end, repetitive work. Total labour cost will not however, see an obvious decrease since a significant number of experienced audit staff would still be required to exercise professional judgment. Furthermore, accounting firms would need to offer competitive remuneration and employee training for high-level inter-disciplinary talent.

**Firm's operation:** Currently, digital audit has limited impact on the operations of accounting firms. The main model is appointment of traditional audit team or combining such a team with a digital audit platform team. For smaller clients or those with relatively low digitalisation, the team model would appear to be more appropriate, as digital audit platform is more suitable for clients with significant scale, and high levels of standardisation and internal quality controls.

## Theme 4: Analysis of risks pertaining to digital audit

**Compliance risk:** Digital audit must comply with relevant laws and regulations to protect data security. As such, employee training is of utmost importance since it will assist employees to understand the importance of data security and the appropriate means of handling sensitive information. Moreover, monitoring of data sources and compliance with local data-protection policies are extremely important.

**Technical risk:** Technical malfunction and system loopholes are key risk factors in digital audit. To counteract such risk, it is essential to conduct continuous inspection and verification of the system's logic to identify system loopholes. It is very important to reduce technical risks.

**Human risk:** Technical staff may be tempted to breach laws, regulations and procedures and disclose data. Some suggestions to prevent such risk include partitioning of work authority and responsibilities, employee training and adoption of measures to raise employees' risk awareness.

**Management risk:** With widespread adoption of digital audit technology, it is possible for audit staff to eventually lack understanding of the complete audit process. It is therefore prudent to adopt certain active measures including training for audit staff to understand and assess audit technology employed by them. Appropriate judgment should be made, particularly in high-risk fields. It may also be wise to consider acquiring insurance and establishing hedging contracts to mitigate these risks.

## Theme 5: Analysis of outlook for accounting industry

Talent development strategy: Accounting skills and professional judgment remain the most important factors during the audit process. As such, accounting skills, professional judgment, professional scepticism, learning capability, adaptability, character and demeanor are the essential qualities of new employees. In addition, there is now greater interest in employing graduates with knowledge of digital technology and inter-disciplinary skills. Auditors are required to reinforce their digital skills, as well as their awareness with respect to data security, data governance and information confidentiality.

## Conclusions and recommendations

It is clear that accounting firms are actively implementing digital audit as it can increase the efficiency, accuracy and overall effectiveness of auditing. Notwithstanding its increasing popularity, at present, it mainly serves as a supplementary tool, as professional judgment and scepticism of accounting professionals remains of critical importance. Technology does not replace the need for accounting professionals during digital audit. Going forward, accounting professionals will have to maintain their competitiveness by continuing to raise their professional competence, judgment and digital capability, while closely following the latest developments in accounting and audit.

The following recommendations are given in this Study Report:

When determining whether or not to implement digital audit technology and the type of digital technology to implement, accounting firms need to take into consideration their needs, their clients' needs and their digital infrastructure. Cost-benefit analysis should also be carried out as digital audit platforms typically require significant initial investment, plus costs associated with ongoing maintenance and employee training.

Accounting firms ought to also pay attention to employee training. They should strengthen effective communication with and train both junior and senior employees. They should raise all employees' awareness of their digitalisation strategy and implementation plan, as this will help get their support, thereby reinforcing the positive impacts of digital audit.

Accounting firms need to monitor the risks pertaining to digital audit and minimise them. To this end, employee training can raise their awareness of data security and so is an important to reducing risk.

Accounting firms need to also reinforce their communications with clients and actively seek their support. Detailed explanations of their principles and the work-flow process involved in digital audit would help gain client trust and hence their willingness to accept digital audit technology.

The government and industry supervising bodies need to pay strong attention to the digitalisation capability of the accounting sector. This includes providing uniform training on data security to avoid differences in understanding of digital technology.

Accounting graduates need to possess a range of skills including professional judgment, commercial insights, adaptability and digital competence to ensure their competitiveness in the job market.

# 1. Digital audit trend

Verhoef et al. (2021) thought that digital transformation of an enterprise involves the construction of a new commercial model through the implementation of digital technologies, thereby creating more value for the enterprise. This encompasses three different processes:

1. the conversion of analog information into digital information
2. digital technology is then applied to change traditional work process
3. the establishment of a new business model and development strategies. The aim is to ultimately achieve a competitive advantage.

Put simply, digital audit is the application of digital technology to audit work and entails a change of traditional audit work processes. As enterprises push their digital transformation, an increasing number of digital technologies are also applied to audit work.

There are significant differences between the means of digital audit and those in traditional audit. For example, traditional audit involves review of vouchers, accounts and forms, whereas digital audit targets electronic data and information data. More importantly, the work of digital audit involves inspection and assessment of source data in the audited entity's IT system using digital means. The aim is constructing a new management model – and hence the quality of data analysis is improved using search technology and multidimensional analysis following collection and validation of fundamental data.

Digital technology also improves the chances of finding irregular data – this being the audit's ultimate aim (Zhang Xinpeng, et al., 2021). An example is the application of automation technology such as robotic process automation (RPA) in auditing as described by Cheng Ping (2021). Cheng proposed a theoretical framework and research and development process for RPA audit robots, setting a reference point for study and deployment of RPA technology in auditing.

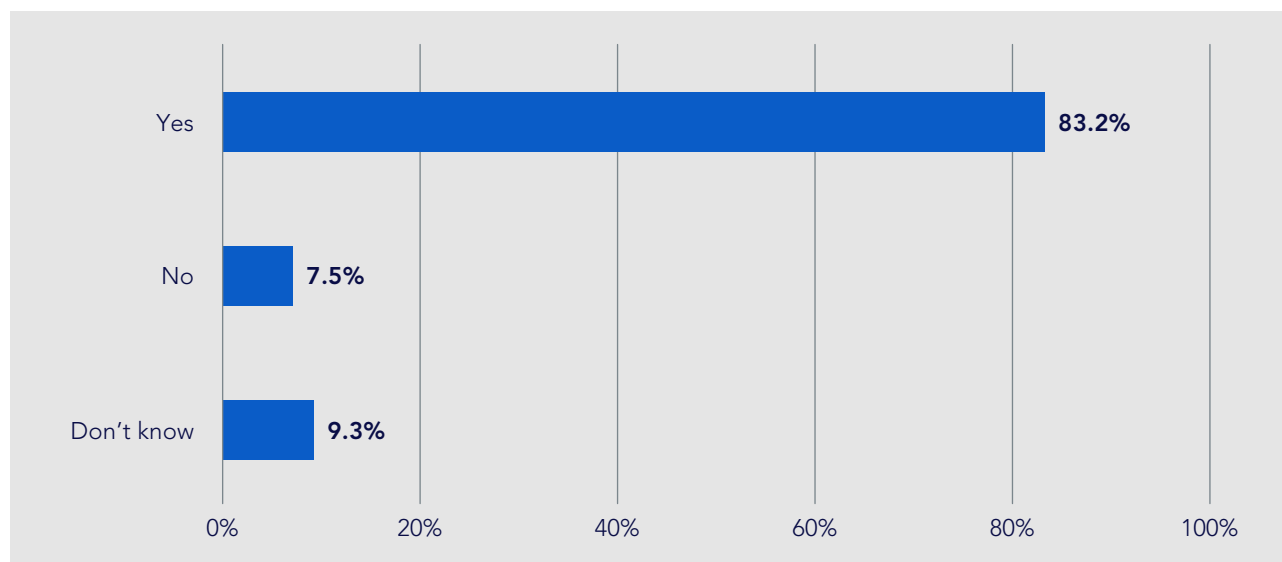
## 2. Online survey questionnaires

The online survey questionnaires focused on gathering information on the application of digital audit by Chinese accounting firms. This includes the use of various technology in actual audit work. The results show that digital audit was widely used in local accounting firms, with most respondents indicating that their accounting firms had clear digital development strategies and implementation roadmaps. At the same time, the use of specific technology appears to vary in different scenarios, with the type and industry of the audited entity having an obvious influence on the digital technology used.

### 2.1 Application of digital technology during audit: Overview

As shown in Figure 2-1 below, the accounting firms which most respondents are affiliated have to varying degrees adopted digital audit technology, with 83.2% indicating use of such technology. Only 7.5% say their firms have not used such technology, while 9.3% didn't know whether their accounting firm is using digital technology. This 'don't know' segment consists of 7.5% junior accounting staff, with senior staff (including management level) making up 1.7%, and only 0.1% of respondents are partners. This could be because the respondents had different interpretation of the concept of digital audit, or because they did not fully understand the audit process in their accounting firm. This is especially so among junior accounting staff.

Figure 2-1: Use of digital audit by accounting firms



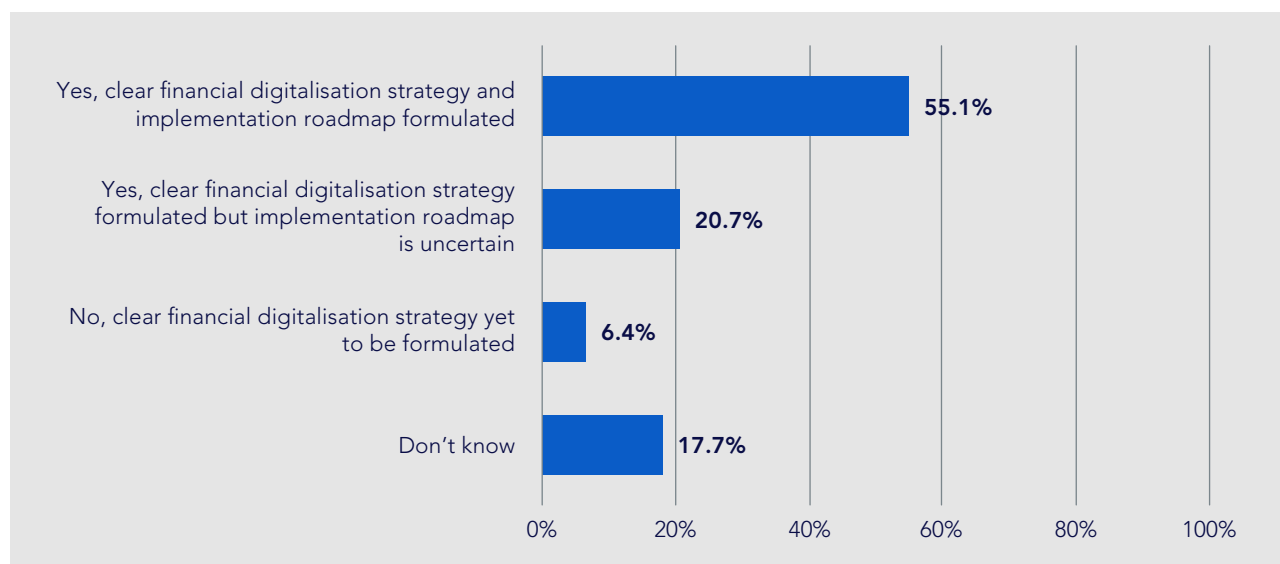
The online questionnaires also asked respondents about how their accounting firms implemented digital technology. 83.2% of respondents said their firm had begun applying digital audit, of which 76.0% said their firm developed such audit work platforms in-house, or procured external audit software. Nevertheless, 23.6% of respondents said their firm used mainly Excel software along with mini programs developed in-house including enterprise application software (EAS) by Kingdee and Aura audit platform for digital audit. Take Aura as an example. Audit draft in Excel and Word format are linked and classified using the software.

Employees at different levels also possessed different understanding of digital audit tools. For example, senior employees and partners rarely accepted digital implementation using only Excel software and in-house mini-programs, whereas some junior accounting staff were inclined to use them for digital audit. It appears that there was no uniform understanding of digital audit tools; senior accounting staff were more cognisant of using new work platform or tools for digital audit work.

As seen in Figure 2-2 below, 55.1% of respondents said their firm has a clear digitalisation strategies and implementation roadmap, while 20.7% said their firm had developed a digitalisation strategy but had yet to implement it. This is indication that the vast majority (75.8%) of Chinese accounting firms recognise the importance of digital audit and having a digitalisation strategy.

At the same time, 17.7% of respondents did not know whether or not their accounting firm had a digitalisation strategy, with most of those respondents being junior accounting staff. A large number of respondents, especially junior accountants are therefore not familiar with the digitalisation strategy of their firm. Accounting firms need to have a greater focus communicating their strategy to staff at all levels and encourage them to participate in its delivery. This would increase the chances of its effective implementation, and assist the firm to build its competitive advantages.

**Figure 2-2: Audit digitalisation strategies by accounting firms and their implementation roadmaps**

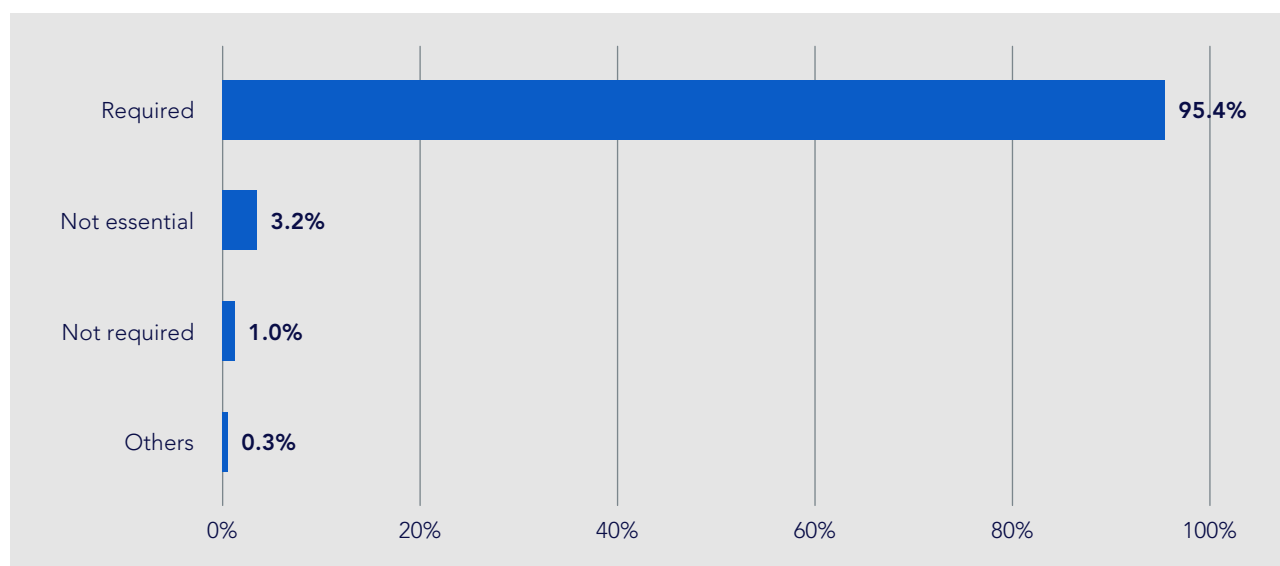


The online questionnaires also asked respondents about the main objectives of accounting firms implementing digital technology. Most thought that their firm wanted to achieve multiple objectives with digitalisation by developing digital tools and grooming talent competent in digital work. The top objective was to improve audit quality and efficiency (86.7%) and giving clients higher quality audit reports. This is consistent with the results of offline interviews. Audit work based on electronic data and IT system and using digital audit tools can be carried out from random-sample audit to quantitative audit, thereby increasing the completeness of random samples, expanding the scope, increasing audit efficiency and improving audit quality.

As indicated in Figure 2-3 below, developing digital audit entails employees have new requirements in digital competence. 95.4% of respondents thought that fresh graduates ought to have certain degree of digital competence, a view fully endorsed by senior accounting staff in offline interviews. Given the demand for digital audit, there appears to an increasing demand by accounting firms for recruits with computer science background.

When conducting digital audit work, there would typically be an IT audit team and a traditional audit team at the client's venue. Recruitment for IT audit teams is different from that for traditional audit team. Most of the recruits for the former would be graduates in computer science with foundational accounting and finance knowledge. For accounting graduates, those with skills in computer science are highly sought after. As such, accounting students should enroll in more big data-related courses to reinforce their digital competence and strengthen their competitive advantage.

Figure 2-3: Digitalisation capability required of graduates by digital audit



## 2.2 Application of eight specific digital technologies in auditing

Eight specific technological tools were extracted following the online questionnaires, with a study of their actual application at various phases of audit. The technologies are artificial intelligence (AI), blockchain, machine learning, computer-assisted audit tools, data mining, natural language processing, social network analysis and other technical tools.

As shown in Figure 2-4 below, all these technologies are deployed in the respective phases of audit, including client investigation and assessment, risk assessment, control testing, substantive testing, analytical procedures and audit opinions, albeit with varying degrees of application. Among them, AI is the most widely-used technology, with the greatest number of respondents recognising it in all six audit phases. Social network analysis ranked second in its application during the client investigation and assessment phase. Computer-assisted audit tools were second in the phases of risk assessment, control testing, substantive testing and analytical procedures. Natural language processing ranked second in the audit opinion phase.

Although digital technologies were applied in the audit opinion phase, the overall level of their application was patently lower than in the other audit phases. There was slightly higher application of AI and natural language processing at this phase (respectively 17.0% and 13.7% of respondents), than other technological tools. Most respondents felt that digital technologies had very little impact on audit opinions. This view is supported by most offline interviewees. In the view of Liu Yuehua (partner, Shine Wing Suzhou), there remained certain technological risk in digital audit, and the audit opinion phase would still require human judgment on data logic. At present, IT audit has yet to garner complete trust of users, with human judgment being preferred over that of machines.

Figure 2-4 Application of digital technologies in respective audit phases

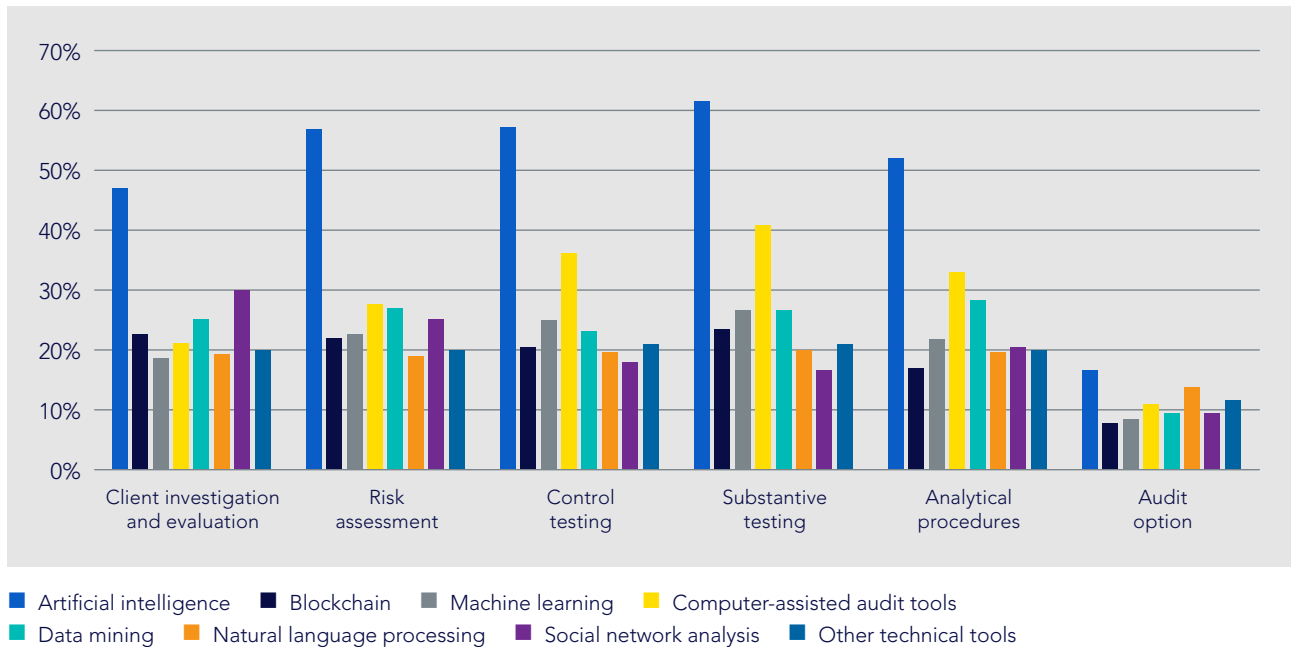
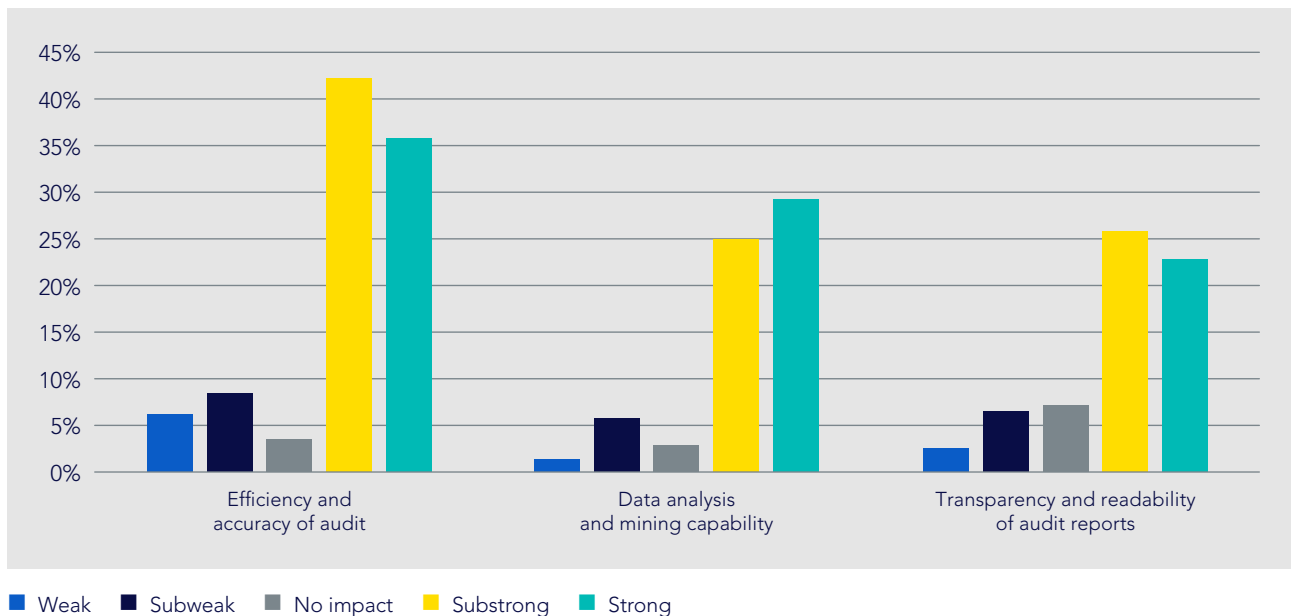


Figure 2-5 Impact of digital audit on effectiveness of audit report

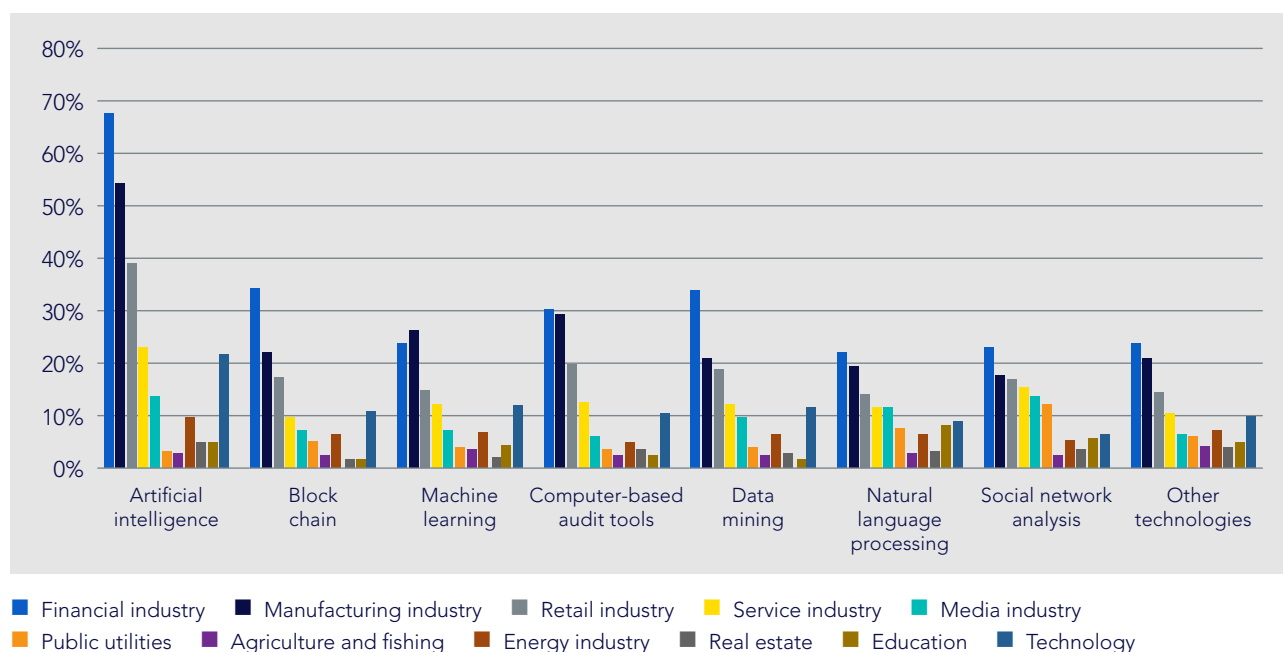


As shown in Figure 2-5 above, most respondents (78.0%) believe that digital audit could significantly improve audit efficiency and accuracy, followed by data analysis and mining capability (54.1%). It is apparent that most respondents recognised the impact digital technologies had on audit work-flow process, in particular in industries with large volumes of transactions and data, including finance industry and those relying on online transactions. As Wang Chao (Managing Partner, PwC) said, the greatest advantage of machines is standardisation. Machines are not subject to interference by human emotions and insofar as the programs and range can be controlled, automation enables better accuracy, security and more authentic results. Of course, trust in machinery is premised on initial risk assessment and control of digital system, and the veracity of the data.

At the same time, only 48.3% of respondents thought that digital audit could significantly enhance the transparency and readability of audit reports. This shows that most respondents did not agree with digital audit having significant impact on audit reports. As described by Liu Yuehua (partner, Shine Wing Suzhou), auditors should not rely solely on machines to generate audit reports, especially in areas such as stocktaking, accounting decision and accounting estimates. Under a standardised model, machines are unable to make adjustments according to the unique circumstances of an individual company. When Shine Wing use IT systems in tandem with financial statements, the firm may still need to make manual adjustments for certain journal items.

There are certain industries where digital audit is more common. As described in Figure 2-6, clients in the finance industry are more likely to use digital technologies. Clients in manufacturing, retail, technology and media industries also use such technologies to a significant extent. Digital audit is less used in industries like public utilities, agriculture and fisheries and energy.

Figure 2-6 Industries which are most suitable for digital audit



Many technological tools like AI and blockchain (acknowledged by respectively 67.9% and 34.7% of respondents) are widely used in the finance industry. As intimated by Wu Ying (Head, Grant Thornton Shanghai), there is a huge volume of, albeit dispersed, data collected by the finance industry. It would therefore be costly to manually review such data, with no guarantee as to its accuracy. Extensive use of digital tools is the most efficient and accurate way of auditing such data, while also saving on labor costs.

AI is probably the most widely-used digital audit tool, with it being used in audits in almost every industry. In addition, computer-assisted audit tools are also commonly used in manufacturing and retail industries (respectively 29.4% and 19.9% of respondents). As for clients in service and media industries, social network analysis (respectively 15.7% and 13.9% of respondents) are more commonly used, likely because of the unique attributes of such industries.

Based on the experience of respondents, clients would need to achieve certain scale before digital audit could be considered appropriate. As indicated in Figure 2-7 (the X-axis being the number of employees with log function with base 10), there would be difficulty with the application of digital audit on clients with less than 100 employees (employee number at 100 with log function of base 10 corresponds to a value of 2.0 on the X-axis). Not more than 10% of respondents thought that digital audit was appropriate for small-sized clients. This could be because of “cost-benefit” consideration owing to the small number of small and micro enterprises with a high level of digitalisation. Hence, there is little need to adopt excessive digital audit technology.



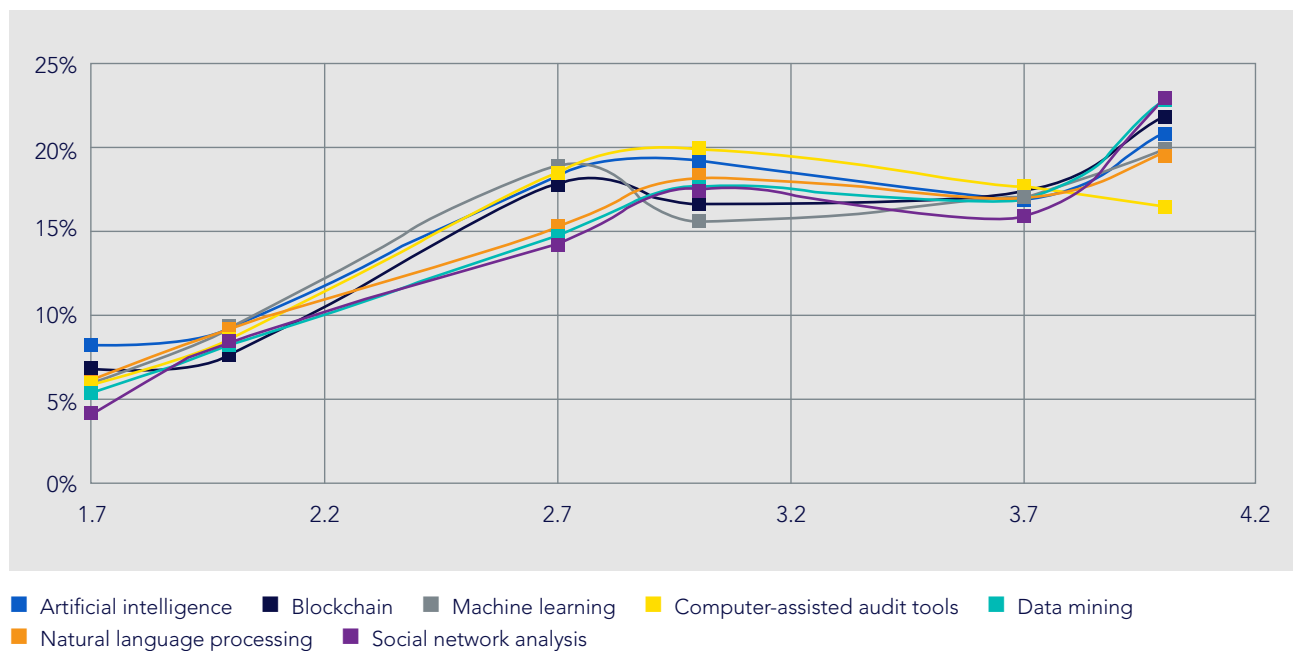
For medium-sized clients with 500 to 999 employees (those with 500 to 999 employees correspond with the values of 2.7–3.0 on the X-axis using base 10 log function) – digital audit can be used where appropriate (agreed by 15 to 20% of respondents). Moreover, various digital technologies were widely used in their digital audit.

For large-scale clients with 1,000 to 4,999 employees (those with 1,000 to 4,999 employees correspond with the values of 3.0–3.7 on the X-axis using base 10 log function), the application of digital audit was moderate (agreed by 16–18% of respondents).

This is somewhat more widespread for ultra-large clients employing more than 5,000 workers (those with more than 5,000 employees correspond with the values of over 3.7 on the X-axis using base 10 log function), as agreed by 16 to 23% of respondents, albeit not significantly higher than medium to large clients. Ultra-large enterprises with more than 5,000 workers are typically Group companies with diversified businesses. If enterprise groups are not centrally controlled and managed, there could be a higher degree of difficulty for implementing digital audit.

**Figure 2-7 Scale of clients for whom digital audit was most appropriate**

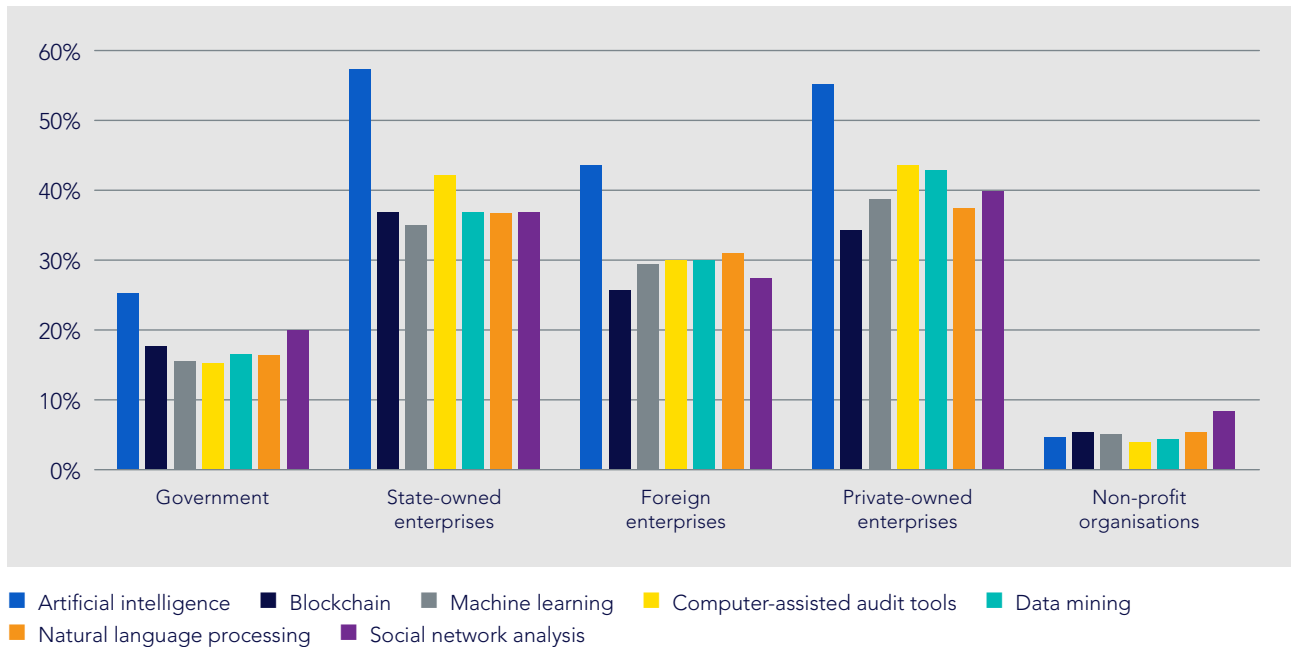
(X-axis being number of employees with log function at base 10)



With respect to the type of clients where the use of digital audit tools is most appropriate, Figure 2-8 shows that various digital audit tools are most acceptable in businesses, in particular locally-owned enterprises (including state-owned and private-owned).

The most popular digital audit tools used in state-owned and privately-owned enterprises are AI technology (57.0% and 55.1% respectively) and computer-assisted audit tools (42.1% and 43.7% respectively). It is followed by foreign-owned enterprises, with AI and computer-assisted audit tools being the most common tools (43.5% and 31.1% respectively). They are far less often used in audit of government departments and non-profit organisations, in particular the latter.

Figure 2-8 Type of clients where the use of digital audit was most appropriate



As most state-owned enterprises are large in scale, digital audit technology would be appropriate for their operations to reduce audit work loads. Domestic enterprises (state-owned and privately-owned) actively followed the government's call for digitalisation and are build their digital audit infrastructure. For foreign enterprises, the construction of digital infrastructure by domestic subsidiaries often depends on the decisions of their overseas parent company. The development of digital infrastructure by government departments and non-profit organisations tends to be more modest. As such digital audit technologies is not appropriate for most organisations in that sector. As described by Fang Chongguang (partner, Diacron) in an interview, small-scale operations of a small percentage of government-funded enterprises or government departments (e.g. canteen) remained reliant on manual accounts entry. As such digital audit did not apply to them.

### 3. Insights from in-depth interviews

This study also includes in-depth interviews with nine professional accountants to help understand the impact of digital technologies on the audit work of accounting firms.

The interviewees came from nine different accounting firms and were either partners or senior consultants in their respective firms. They practiced in Shanghai or Suzhou, as indicated in Table 3-1 below.

Most of the accounting firms were large firms in China. According to the “2022 Top Hundred Accounting Firms” published by the Chinese Institute of Certified Public Accountants, eight of the accounting firms were ranked top ten nationally in overall competence. The remaining accounting firm (Diacron) is a small to medium-sized firm specialising in foreign-invested enterprises. It serves as an important supplement in the study.

**Table 3-1: Accounting firms and designations of interviewees**

	Name	Accounting Firm	Position
1	Deng Chuanzhou	RSM	Partner
2	Fan Wei	Deloitte	Partner
3	Fang Chongguang	Diacron	Partner
4	Jiang Wanying	EY	Senior Consultant, Technology Risk Department
5	Li Ping	BDO	Partner
6	Liu Yuehua	Shine Wing	Partner
7	Wang Chao	PwC	Partner
8	Wang Chen	Pan-China	Senior Partner
9	Wu Ying	Grant Thornton	Head of Shanghai Branch

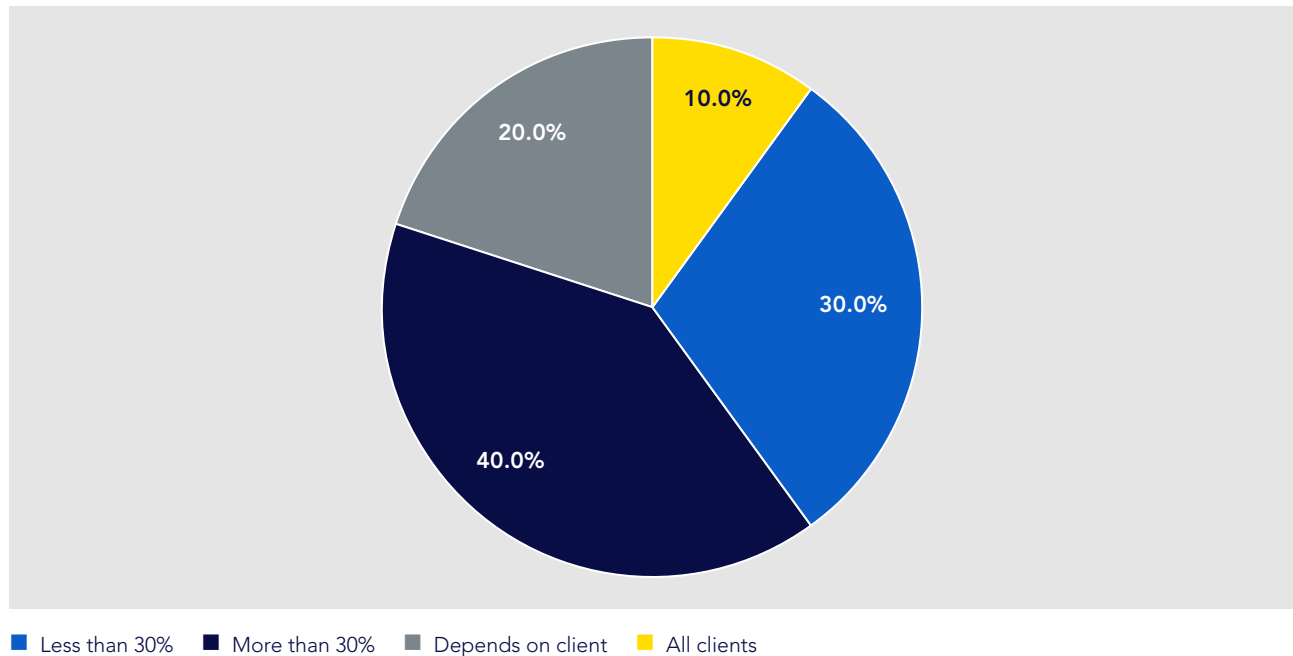
#### 3.1 Proportion of digital audit in current audit work

The results of online questionnaires shows most respondents said their accounting firms had already begun using digital audit (83.2%) and have formulated clear digital strategies (75.8%). During interviews of accounting firm partners/audit managers, the interviewees provided more in-depth insights on the use of digital audit.

As shown in Figure 3-1 below, the interviewees held different views on the importance (proportion) of digital audit in existing audit work. Four interviewees said the percentage was not less than 30 per cent, while three interviews took the opposite view.

There is obvious disparity with respect to the application of digital audit by different accounting firms. For example, Wang Chen of Pan-China thought that although digital audit was not used in abundance by his firm, it was growing at a rapid pace. Wang Chao of PwC on the other hand thought that there was a higher percentage of digital audit in his firm’s work. That said, the application of digital technology would be limited by the client’s level of acceptance with respect to access to its data, and the client’s scale of operation. Wu Ying of Grant Thornton hoped that all clients could accept connectivity with the digital audit platforms of accounting firms as this would significantly improve the efficiency and accuracy of audits. It would also help achieve widespread adoption of digital audit.

Figure 3-1: Percentage of overall auditing work that involves digital audit processes

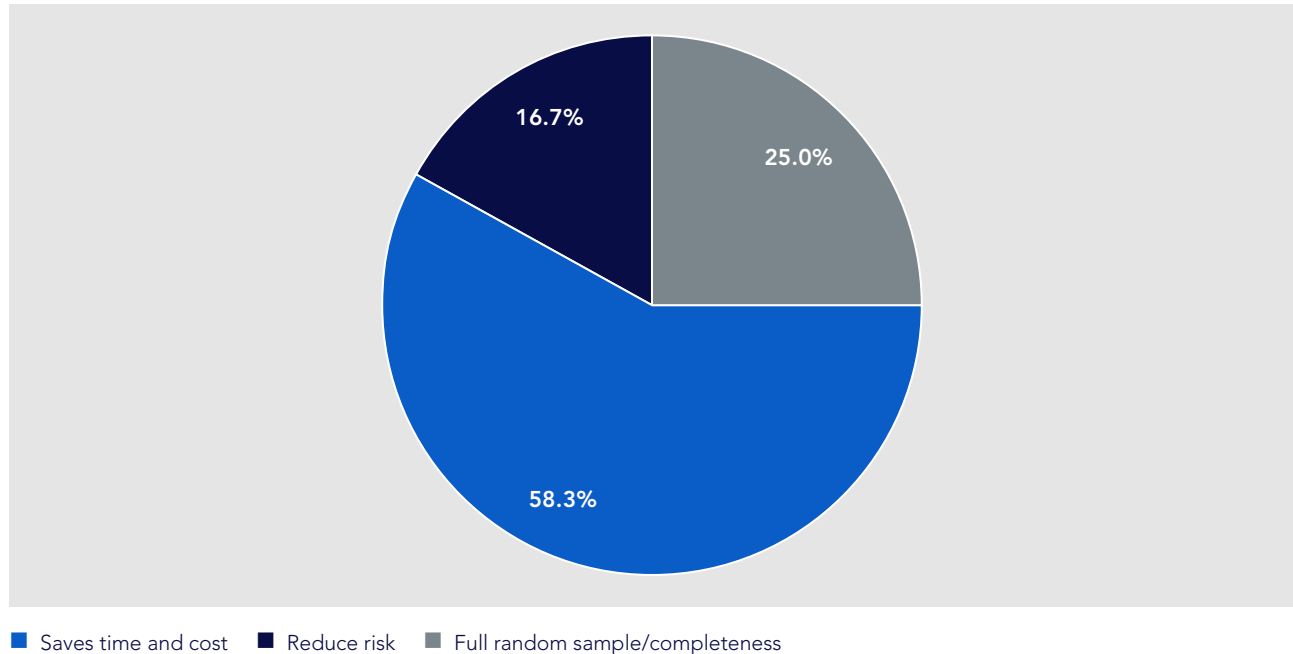


As described above, there is disparity in the level of application of digital audit by accounting firms; some firms already frequently use such technology, whereas others have yet to adopt it to a great extent. An important factor is the needs of clients. They affect the level of use of digital audit by firms. Furthermore, the type of digital audit platform used by accounting firms was a key supporting factor in the successful promotion of digital audit.

### 3.1.1 Advantages of digital audit

Generally, the interviewees thought there were many advantages in digital audit, particularly with respect to its efficiency. As indicated in Figure 3-3, seven interviewees thought digital audit could save time and cost. Moreover, the interviewees also said that random-sample audit to full quantitative audit is possible with digital audit, thereby increasing the completeness of random samples in audit work. Of the interviewees, Wang Chen of Pan-China thought that digital audit would save time and enhance the completeness of audit evidence. Deng Chuanzhou of RSM thought that digital audit system could automatically identify irregular data and was therefore helpful in high-risk areas. Many substantive processes are now based on big data. Examples including external confirmation system based on bank big data, and review of income based on logistic evidence and online-signature data. While significantly improving operational efficiency, big data also reduces audit risk. Digital audit is all-encompassing, and it also indirectly acts as an audit of society, as intimated by Fang Chongguang of Diacron.

Figure 3-2: Advantages of digital audit

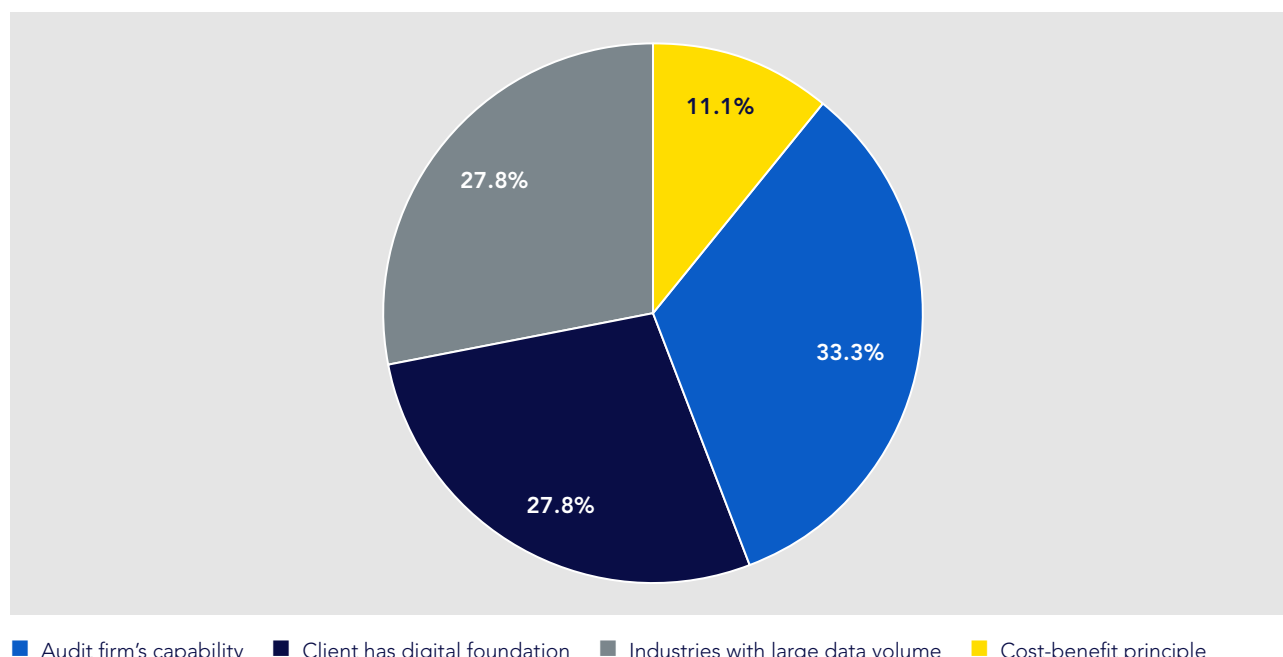


This is consistent with the results of online questionnaires. 86.7% of interviewees thought the greatest advantage of digital audit was to improve audit efficiency, allowing their firm to provide high-quality audit reports to clients. Digital audit possesses significant advantages in relation to time- and cost-saving, reducing audit risks and more comprehensive analysis. These advantages have enabled digital audit to constitute an important component in today's audit work.

### 3.1.2 Conditions for implementation of digital audit

There are several conditions necessary for implementing digital audit. In general, the interviewees thought that digital audit was more appropriate for industries capable of generating large amount of data, since such data could more easily be analysed and audited using automation tools. Indeed, the greater the volume of data, the higher the potential benefit for digital audit. This feedback was consistent with results of the online questionnaires. The online respondents thought that digital audit would be most appropriate in three industries – finance, manufacturing and retail. Not only would these industries possess large data volumes, but they would have excellent digital infrastructure.

Figure 3-3: Conditions for implementation of digital audit



In Wu Ying's (of Grant Thornton) view, accounting firms need to consider whether clients are equipped with basic infrastructure and technical tools for digital audit, as well as the benefits outweigh the costs. Under certain circumstances, digital audit may significantly reduce audit cost and time, thus improving work efficiency. However, accounting firms need to consider whether they achieve an adequate return on their investment in audit technology. Another important factor is whether the client's industry is subject to industry and regulatory supervision, laws and compliance requirements. Digital audit must comply with relevant laws, regulations and regulatory requirements, and the industry's regulatory environment will affect whether digital audit is feasible.

### 3.1.3 Will digital audit replace manual audit?

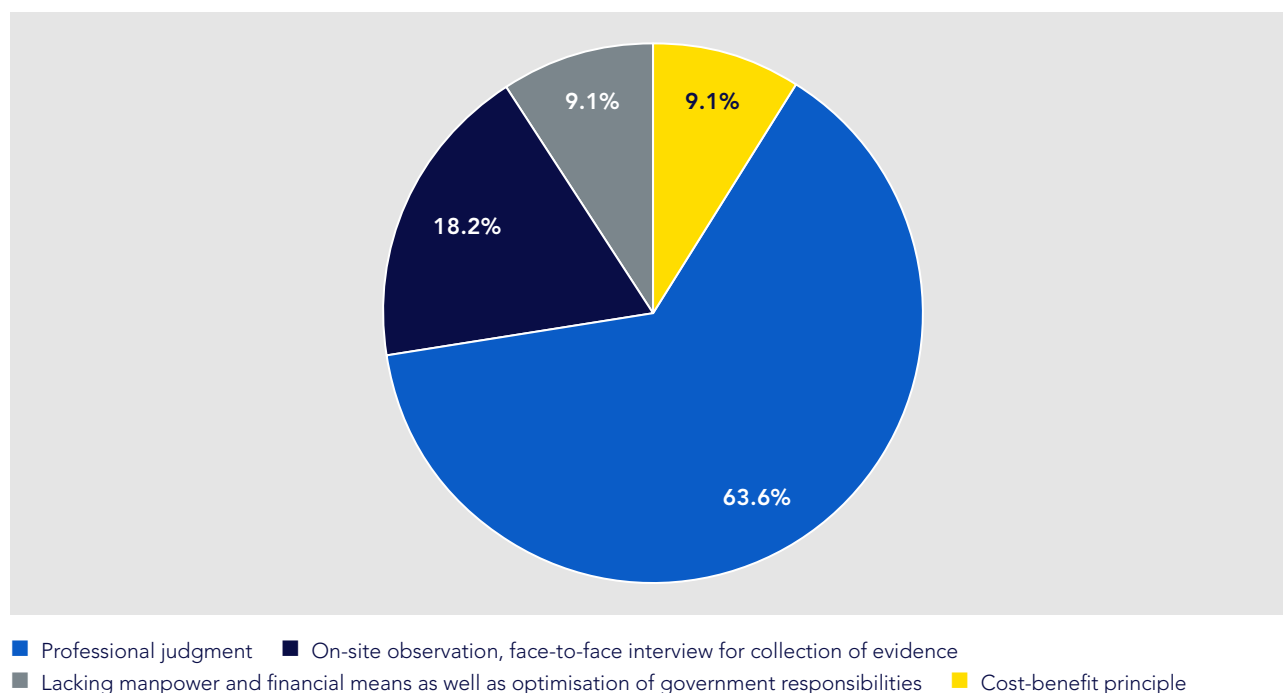
Interviewees generally felt that digital audit could not completely replace manual audit. Despite its obvious advantages in terms of data processing and analysis, efficiency and accuracy – there remains numerous limitations with respect to the implementation of digital audit. Audits remain reliant on professional experience and subjective judgment of auditors.

Liu Yuehua of Shine Wing gave an example of stocktaking of physical assets. An auditor must be present at the client's site to conduct and observe the stocktake to ensure its accuracy. In contrast, digital audit tools are currently incapable of conducting an inspection of the physical items.

Subjective judgment and estimates are often required, which requires the professional judgment of auditors. At present, it is not possible to completely rely on digital tools to make such judgment. Diacron's Fang Chongguang is of the view that on-site observation and face-to-face interaction cannot be carried out by digital audit tools. An auditor may be required to interact with management, employees and other interested parties in order to obtain important information and understanding.

BDO's Li Ping is of the view that some information and data may need to be cross-validated and analysed using different channels. An auditor would need to use professional judgment to determine which data is most reliable. Wang Chen of Pan-China takes a somewhat different view – new accounting standards and regulations require in-depth interpretation and application by auditors. Digital tools might be able to provide support for data analysis but auditors would still need to understand and interpret such standards and regulations in order to carry out corresponding audit.

Figure 3-4: Reasons for digital audit not being to completely replace manual audit



In view of the above, digital audit is often combined with manual audit to fully display their respective strengths. Digital audit can raise audit efficiency, reduce repetitive work, but the auditor's professional knowledge and judgment remain critically important, especially in circumstances requiring subjective judgment and interaction with clients. The future of audit may likely end up in the integration of digital and manual audit, a boon for clients as this would be more comprehensive.

## 3.2 Impact of digital audit on audit quality

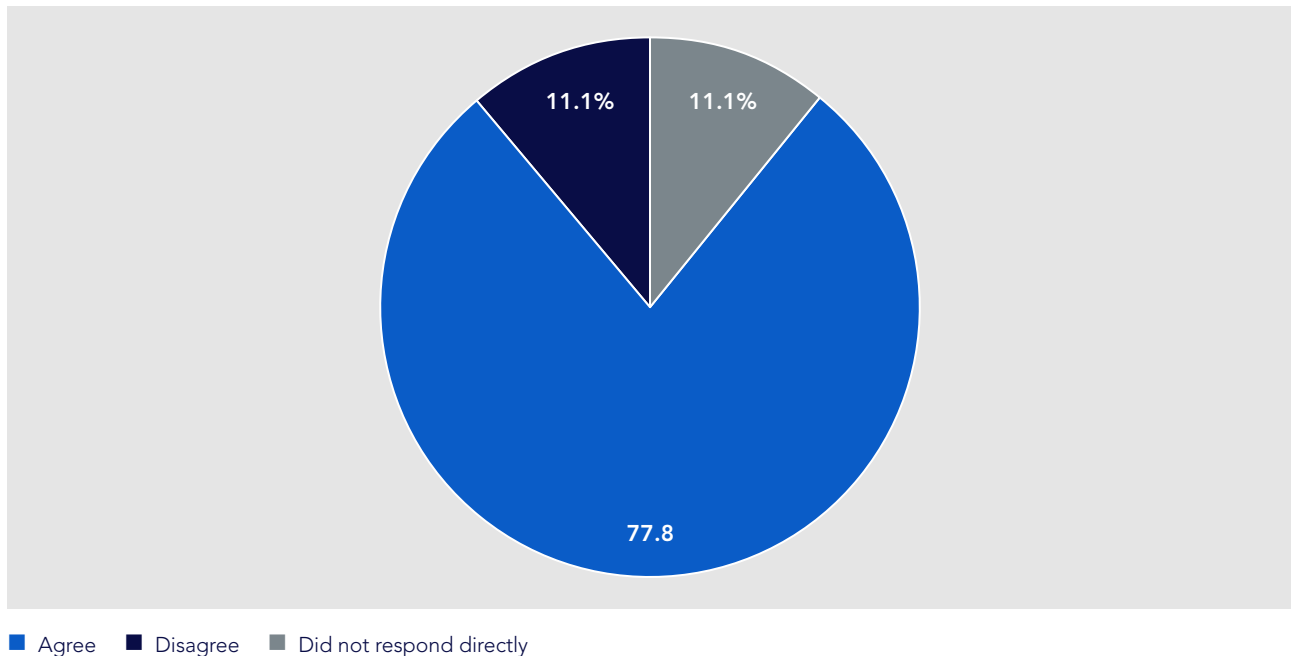
### 3.2.1 Does digital audit improve the overall quality of audit work?

Most of the interviewees agreed that digital audit could improve audit quality, reduce human errors and impact of subjective bias. A total of seven interviewees held this view. There were also some dissenting views. Although Grant Thornton's Wu Ying recognised the importance of digital audit (improving audit work efficiency), he did not think that digital audit could significantly improve audit quality. He thought the effect would be extremely limited except in certain special circumstances.

It is undeniable that most accounting firms use digital audit technology, albeit to varying degrees. Large accounting firms possess comparatively more resources to develop, procure and apply digital technology. Furthermore, their clients are more likely to be multinational corporations, large state-owned enterprises or large local private companies. Their scale is typically larger, their structure is more complex, their client-base more diverse and transactions more voluminous. As such there would be vastly more accounting data and many of their clients would have higher requirements for audit efficiency and quality. They are therefore more inclined towards wide-ranging use of digital audit technology to analyse and review large numbers of transactions.

This conclusion is basically consistent with that of the online questionnaires. 86.7% of the respondents thought that the primary objective of digital audit was to improve audit quality and efficiency, and provide clients with high-quality audit reports. 78.0% of respondents said that digital audit could significantly affect audit's efficiency and accuracy (i.e. "less strong" or "strong"), an indication that most professionals recognise that digital technology can improve audit efficiency and quality.

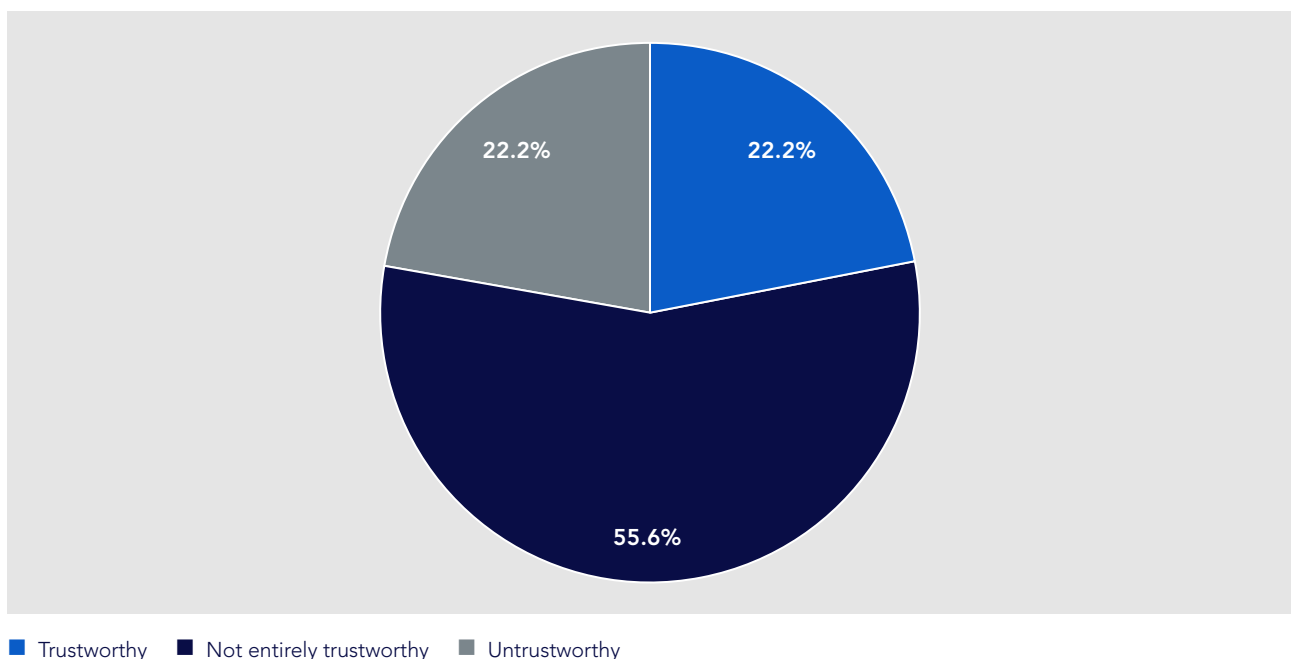
Figure 3-5: Whether digital audit raises audit work quality



### 3.2.2 Can audit work completed by software be trusted?

Among the interviewees, Deloitte's Fan Wei and Diacron's Fang Chongguang completely trusted software to complete audit work. Since such technology or software would have undergone rigorous verifications, the statements or reports generated by them ought to be totally trustworthy. However, the other seven interviewees stressed to varying degrees, the importance of manual review. They are of the view that digital technology was merely a tool that assisted audit work. It mainly helped audit staff to discover and concentrate on suspicious transactions and corresponding key risk items. This would enable auditors to retrieve audit evidence more quickly and effectively, exercise professional judgment and arrive at a reasonable audit opinion and hence reduce audit risk.

Figure 3-6: Whether audit work conducted by software could be trusted





The interviewees generally felt that at present, digital audit technologies were unable to distinguish true, accurate, complete and compliant assessment or test. These require auditors to follow traditional ways to review and evaluate them. This is because, the types of representations or disclosures to be made by clients may differ according to their industry, as the laws and regulations governing industries may differ. This is compounded by some accounting standards allow different accounting treatment. Thus, during an audit the auditor needs to be flexible and make their own professional judgment, meaning purely digital audit is inappropriate.

### 3.3 Impact of digital audit on audit efficiency and cost

#### 3.3.1 Impact of digital audit on audit cost

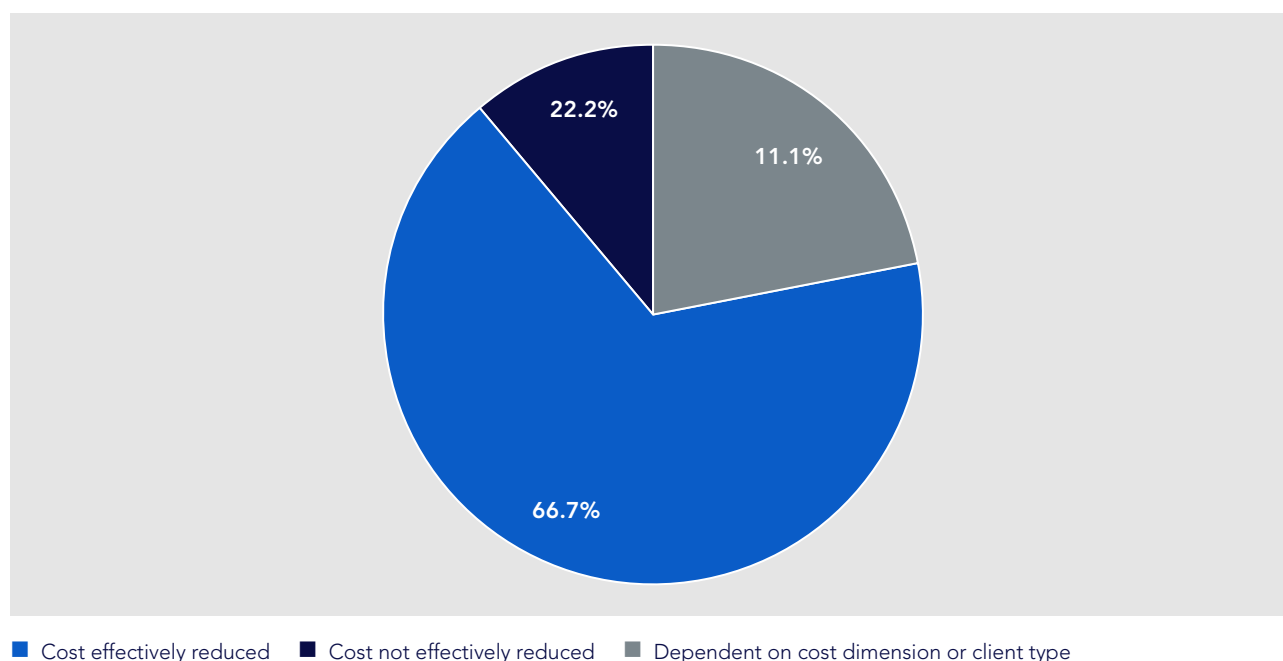
Most of the interviewees thought that digital audit could improve work efficiency and reduce the cost of audit work. Six interviewees supported this view. Digital audit technology could effectively reduce cost was mainly seen in the following:

1. its ability to save the time required to do manual audit and improve work efficiency;
2. its ability to save the cost of issuing inquiry letters through confirmation information system, and IT systems could be used to replace manual random-sample check, and
3. it could improve audit accuracy through the study of abnormal fluctuations in the data since the latter could be presented in an intuitive manner.

The above applies particularly to audited entities in finance and retail industries, as clients in these industries tend to have voluminous and dispersed data. As such, traditional manual audit would significantly increase labor, materials and time cost of an audit.

EY's Jiang Wanying however felt that the application of digital technologies might not necessarily reduce a firm's overall cost. Instead, investing in such technology would increase the firm's financial burden. Examples include research and development expenses for digital audit technology and the cost of employing more professionals with digital competence (such as data-analysis team, application or platform development and maintenance team).

Figure 3-7: Impact of digital audit on audit cost



Both Fang Wei (Deloitte) and Li Ping (BDO) opined that the impact of digital technologies on cost was multi-faceted. For example, we would need to consider the diversity of audit clients. Some clients had limited digital capability with the result that their data's integrity and veracity could not be ensured, while some state-owned and large privately-owned enterprises might hold sensitive data, giving them some weariness towards granting access to their audit firm's digital audit platform. Thus, for some clients' digital audit would be incomplete. It follows that audit cost would not be saved by a digital audit for such organisations.

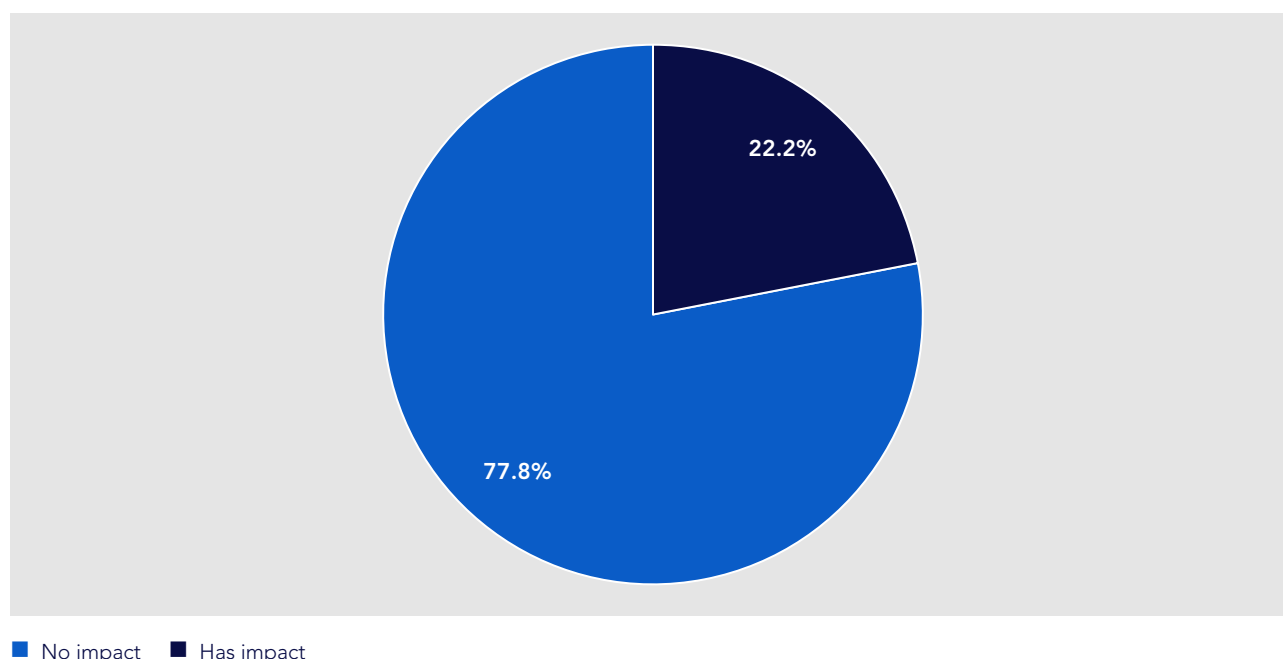
### 3.3.2 Impact of digital audit on audit labor cost

The interviewees generally agreed that digital audit would have limited impact on an accounting firm's labour costs, in particular their total labor cost and human resource planning. Of the interviewees, seven thought that sufficient numbers of experienced audit staff would still be needed to complete follow-up audit work, including retrieving data from the digital audit application or platform, verifying the veracity and integrity of such data and subsequent data review work. Grant Thornton's Wu Ying mentioned that regulatory authorities and intermediaries were less encouraging of remote audit despite its emergence. This is because face-to-face interaction, on-site observation and visits would enable auditors to gain a sense of the situation, and allow them to obtain more direct and indirect evidence.

In view of the widespread use of digital audit at present and for the foreseeable future, certain standardised, mechanical processes can be carried out by automation platforms. This reduces the cost of audit staff undertaking low-level work. When recruiting audit staff, accounting firms need to hire more individuals with digital competence. That is, there will be more digital audit staff, while there will be less audit staff who carry out low-level, repetitive work.

Overall, total labor costs of audit department is unlikely to reduce significantly. In Wang Chen's (Pan-China) view, the human resource strategy of his firm includes encouraging employees to continue learning and obtaining relevant qualifications in order to enhance their IT competence. EY's Jiang Wanying also mentioned that, with respect to the recruitment and development of staff with digital skills, their remuneration would doubtlessly need to increase. This means incurring increased training expenses.

Figure 3-8: Impact of digital audit on accounting firm's labour cost



### 3.3.3 Impact of digital audit on audit work-hour cost

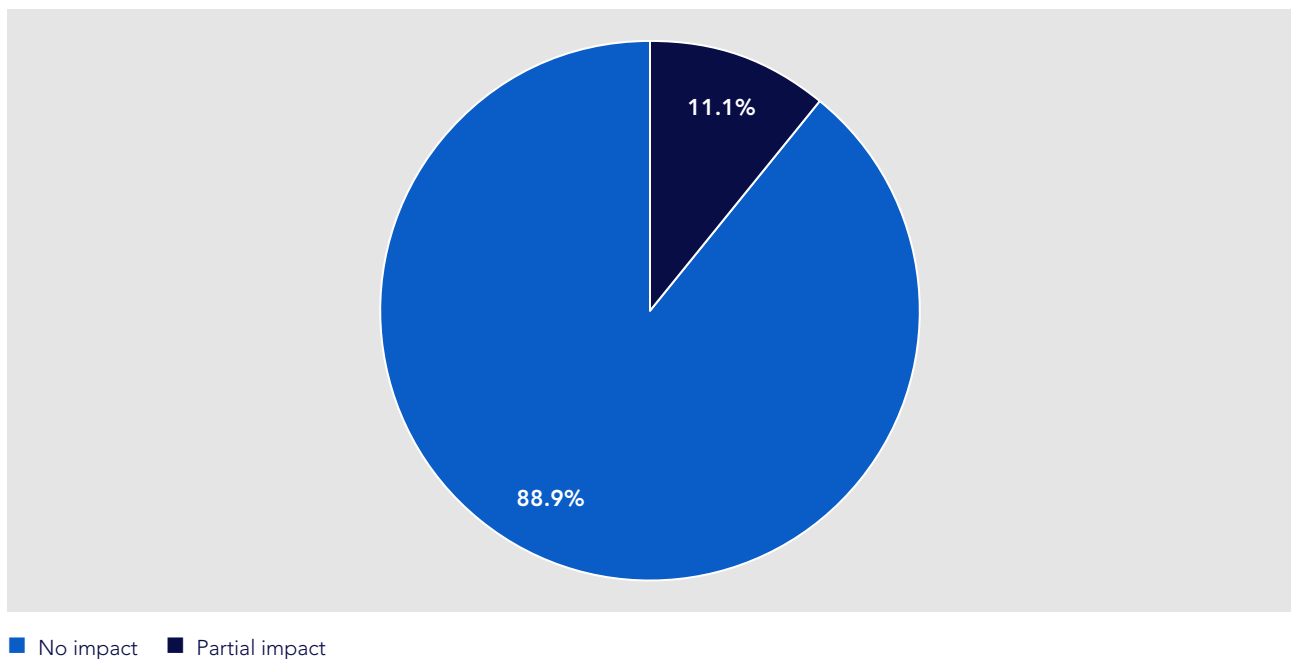
A new issue is defining the charging rate for digital audit. All nine offline interviewees said that at present there was no clear distinction between the hourly charge out rate for machines and labor. Moreover, they thought that at present, there is no need to separately compute the charge out rate for robots.

All nine interviewees said that digital audit had no impact on their audit charge out rates. Such fees are not reduce due to the use of digital devices. In reality, audit staff are still required to carry out large amount of audit work.

Eight offline interviewees said that clients often did not ask to reduce audit charges even after implementation of digital audit, as most of them were more concerned with obtaining an acceptable, quality audit report. They tended not to have any exacting demand for the method/technology used in carrying out audit. PwC's Wang Chao pointed out that, clients would generally be more confident in an accounting firm with powerful digital audit capabilities and would hope to continue engaging it. They would not give much thought to reducing audit charges in this regard.

Nevertheless, Deloitte's Fan Wei thought that as clients undergo digital audit and share their data, the audit process should, in theory be more efficient, and therefore the audit fee charged by the accounting firm should recognise that.

Figure 3-9: Whether digital audit would affect client's expectation on fees

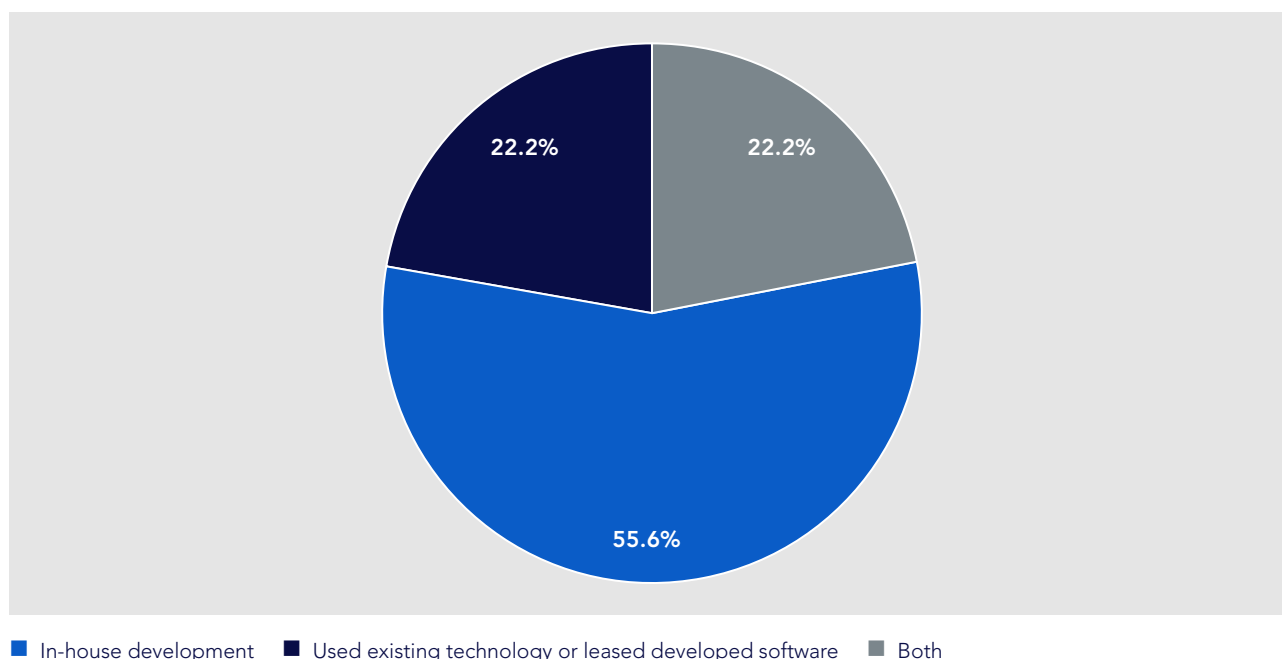


### 3.3.4 What additional cost would be incurred with digital audit?

All nine offline interviewees said that there would be no additional cost during traditional project-based audit process. However, additional cost would be incurred for implementation of digital audit. Such cost would generally be generated during the initial development period of digital audit capability and during its maintenance.

On the accounting firm's development strategy, five offline interviewees said their firm had developed relevant digital audit software/platform. Two said that, due to cost considerations, their firm had used technology already available. An example being Excel. Another alternative was to lease mature audit software or platform. Two other interviewees said their firm had both developed in-house, and leased mature audit software/platform.

Figure 3-10: Mode of investment in digital audit tools



The manner of development of digital software/platform differs depending on individual accounting firms, hence their development and maintenance cost differ. Generally speaking, most of the cost of in-house development are incurred at the initial stages, including development costs, data procurement, product configuration, personnel training and machinery replacement/upgrade. Post-development storage and management of data also comes at a cost. For audit software that is leased, accounting firms pay at each lease installment with the charges potentially significantly higher for complex software systems. Additional costs would be incurred for the engagement of experts, or IT professional. Regardless of the mode of development, the cost of training audit staff on the use of technology is both important and essential.

In summary, all the interviewees were positive about the impact of digital audit on the efficiency and cost of audit. They recognised that digital technology could enhance the efficiency and accuracy of audit, and may reduce some labor costs, especially staff conducting low-level and repetitive work. Nevertheless, the development or lease of digital audit technology would necessarily involve development cost and charges for technical professionals. Therefore, one would need to examine audit cost from numerous perspectives and over a long period of time.

In conclusion, the scope and level of application of digital audit technology depends on the judgment of decision-makers in the respective accounting firms. They should consider the relationship between their firms' investment and the benefit generated by such technology.

### 3.3.5 Are accounting firms required to develop digital audit tools on a sustained basis?

Where an accounting firm has invested in digital audit, it would have its own strategy on how to sustain innovation and use of such digital audit tools, in keeping up to date with the needs of audit in a digital era. Three interviewees said that high development cost and risk are key factors limiting the development of new audit technologies and tools.

That said, four other interviewees reiterated the necessity of sustained development and technological innovation. Fan Wei of Deloitte mentioned that his firm carried out continued innovation of its data-analysis tools and automated audit tools in order to enhance audit efficiency and quality. Wang Chao of PwC revealed that his firm was partnering with Microsoft and Google in the development of digital audit software as well as providing personnel training and digital services. Jiang Wanying of EY said her firm was constantly innovating and applying data-analysis tools and automated audit tools. Shine Wing's Liu Yuehua said his firm had dedicated IT audit team and was developing in-house audit software.

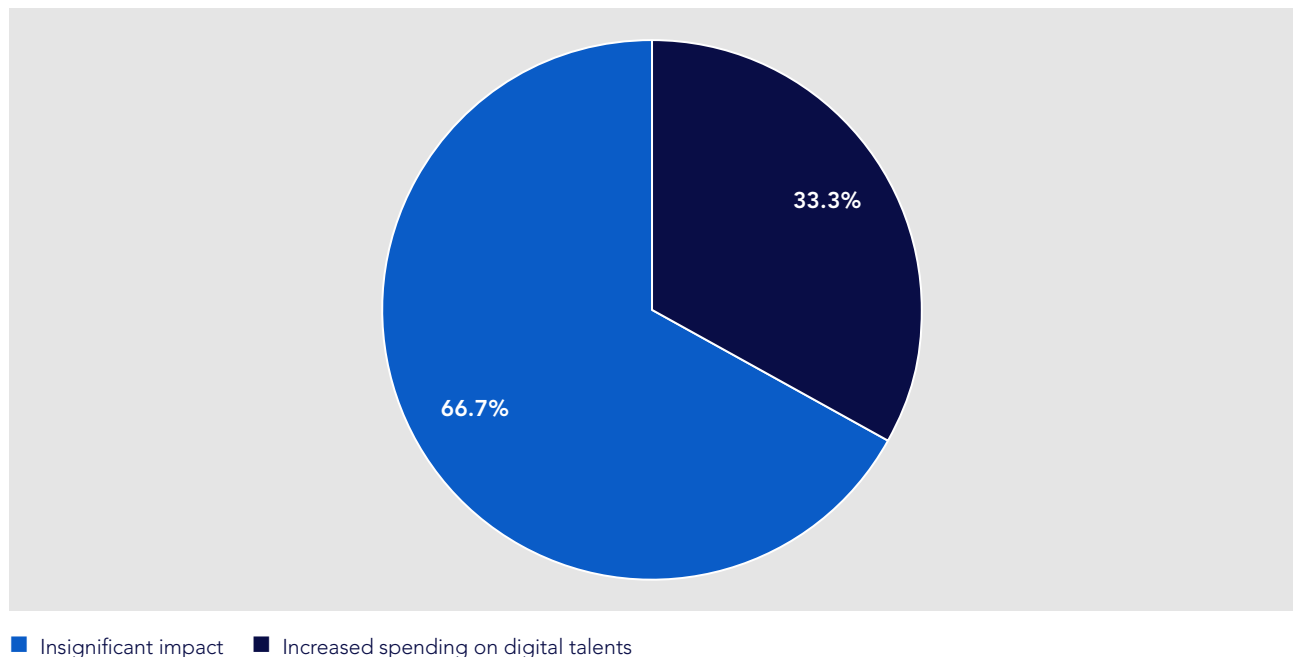
### 3.4 Impact of digital audit on the role and competence of audit staff

#### 3.4.1 How digital audit affect accounting firms' talent-cultivation and human resource management strategies

Six offline interviewees said overall digital audit did not have any significant impact on their firms' talent development and human resource management strategies. This was because the focus for both was on the professional skills and ethics of accountants and auditors. Their professional judgment, learning capability, and capacity for handling standardised work following the treatment of data by digital platforms are also carefully cultivated. For example, some accounting firms have a talent-development model headed by internal mentors. This model had the benefit of passing down the firms' culture and values. Yet other firms utilise the audit team model for small and medium audit projects, a model that could adequately meet their clients' needs. Then there were accounting firms which set up departments for IT audit and software development. Although demand for IT audit team members is increasing, such teams still need to be complemented and supported by professional audit teams. They are not mutually exclusive.

Both Fan Wei (Deloitte) and Jiang Wanying (EY) said that, in contrast with traditional audit, use of digital technology would mean an increase in expenses for hardware and software and digitally-competent staff. At the same time, investment in staff carrying out low-level and repetitive work would decrease. Not only would auditors be required to possess professional skills and judgment, they would also be expected to understand technology. Thus, accounting firms need to add staff with digital technology expertise. Such staff however do not come cheap. Accounting firms would therefore need to achieve a balance between cost and effectiveness.

Figure 3-11: Whether digital audit affected accounting firm's human resource management strategy



### 3.4.2 What type of digital audit training would existing employees need?

All nine offline interviewees recognised the importance of training with regard to digital audit. Indeed, training by accounting firms on computer, database and general audit software was a regular and foundational matter. Some interviewees also said that training, given the growing importance of digital audit, on data security, data governance and confidentiality was of critical importance.

Digital audit training came in numerous formats; some firms regularly invited external professional organisations to conduct seminars. Others provided incentives for employees to become more conversant in digital development and IT skills, in order to spur their interest in learning and exploring new technology. Depending on a project's scale, the client's actual needs and industry characteristics, some accounting firms offer support through Q&A by part-time IT workers and development of mini programs such as MS VBA (Visual Basic for Applications).

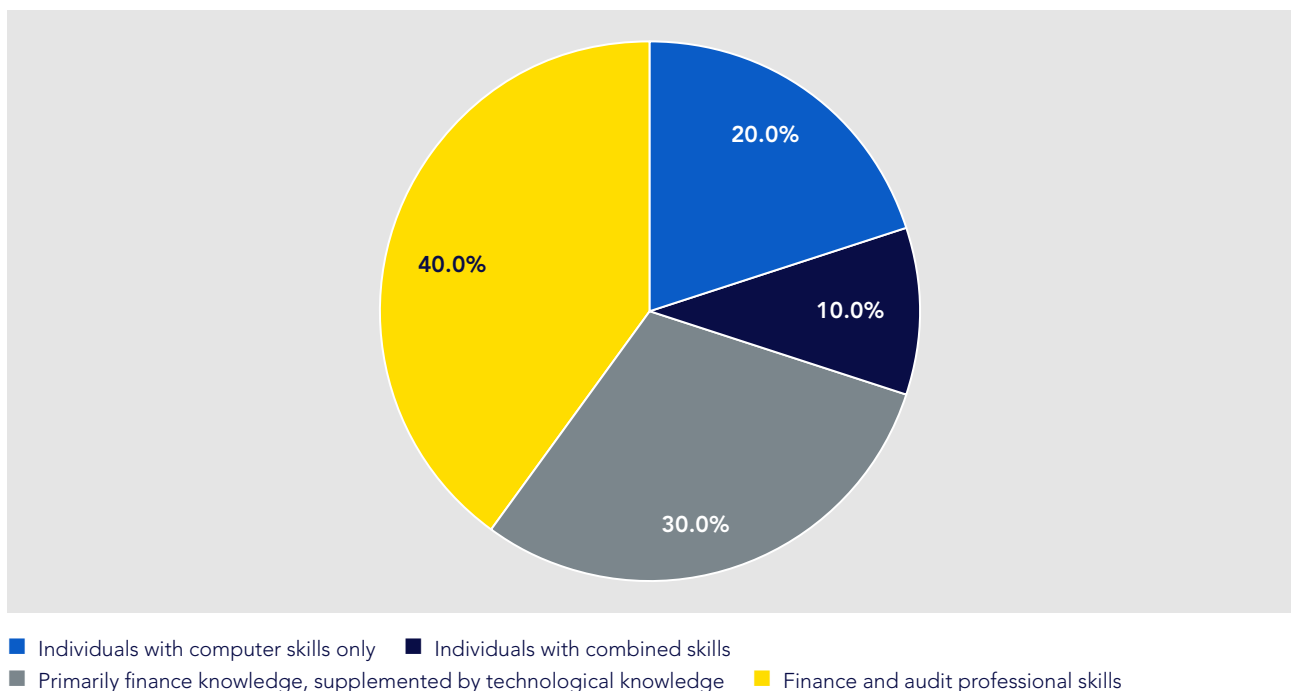
All accounting firms interviewed provided training on IT technology and data security as well as incentives schemes for employees to upskill. According to Wang Chao (PwC), unlike compulsory training on accounting standards, laws and regulations, training on digital competence is not compulsory. As such it required a rich, open learning environment for new learners.

### 3.4.3 What type of employees are needed to carry out digital audit work?

The offline interviewees held different views on employee recruitment, in particular their level of IT competence. Four interviewees thought that an auditor's professional and learning capability, adaptability, personality and sense of decorum were most important. That is, digital audit would not change the fundamental requirements for audit professionals. Three of them said that financial audit capability was the core requirement and digital audit capability was supplementary. Jiang Wanying (EY), for example, said her firm preferred talent with business studies background and computer skills. The above is indication that given the demand for digital audit, accounting firms prefer to recruit talent with digital competence. This trend will not abate anytime soon. Although an applicant's financial and professional skills were extremely important, possession of digital skills would be an added advantage.

Fan Wei (Deloitte) and Liu Yuehua (Shine Wing) indicated that some firms had in place professional IT teams consisting primarily of workers with coding, system control and computer backgrounds to conduct digital audit work. That said, IT team members needed to also possess some finance background. They were to work closely with professional audit teams, complementing and supporting them, and vice versa.

Figure 3-12: What type of employees carry out digital audit work

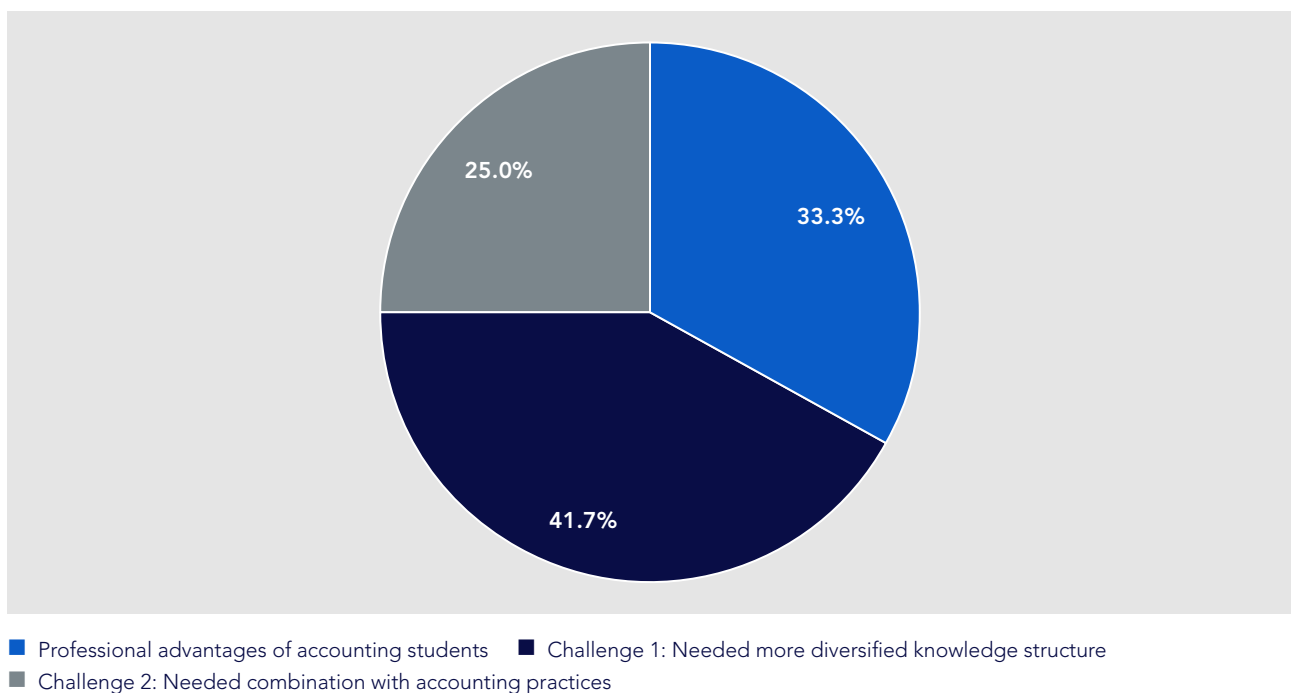


### 3.4.4 Advantages and challenges of accounting graduates in a digital era

Five interviewees thought that accounting graduates possessed considerable competitive advantage even with the growth of digital audit. Individuals with a combination of skills would be even more sought after, given the challenges in this digital era. Therefore, accounting students need to learn digital technology skills while still in university to increase their chances of being recruited.

Some interviewees suggested it would be wise for students to gain a better understanding of enterprises' operating model by learning about audit theory and practice, and have a grasp on the impact of accounting treatment on financial statements.

Figure 3-13: What advantages and challenges digital audit had on accounting students



### 3.4.5 Professional judgment of auditors in digital audit

Of the interviewees, six said that during digital audit work, machinery was a tool to carrying out digital work. The auditor remained in command. Three interviewees were at pains to point out that people and machine complemented each other. However, machine could in no way replace humans. More specifically, machines would aid by carrying out procedural, repetitive digital processing work such as the collection, integration, extraction and analysis of financial information. This could significantly raise work efficiency and accuracy. However, their value is dependent on data quality and quantitative indicators. Entry of such data and indicators as variants would to a significant extent depend on subjective human judgment. As such, the call remained for the auditor to manage, control and supervise data quality at source, with the auditor formulating the standards for machine analysis in different circumstances. Where digital audit tools needed to be optimised in the future, the auditor could also offer professional advice and guidance.

More importantly, the International Accounting Standards Board had in recent years incorporated significant element of subjective judgment in its new standards, highlighting the importance of the auditor. Indeed, an auditor would need to review, evaluate, interpret and analyse the results of a machine's operation and make professional judgment with respect to the results of random-sample audit and risk points presented by data, etc. The auditor would also need to offer more in-depth audit opinion and insights to interested parties according to their understanding of the client and their objectives, combining it with their personal experience. If there was significant disparity between the auditors and the machine's results, the auditor would also need to obtain evidential support through interviews and on-site observation, etc.

It was pointed out by some interviewees that to a certain extent AI technology could help auditors with respect to judgment, but the auditor would still in turn need to determine the rationale of AI judgment. This was because machine-learning was based on historical data, with the potential of disparity inherent in such data increasing audit risk. As such a professional's judgment would still be needed.

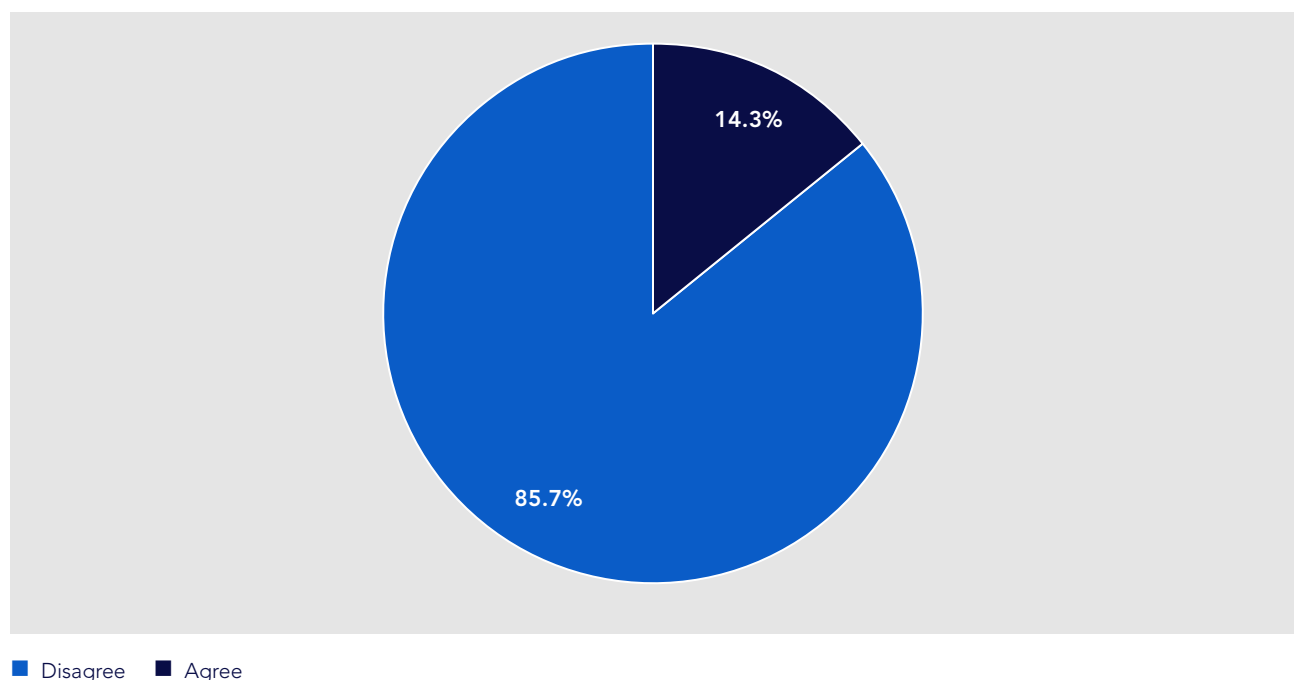
For this reason, all the interviewees agreed that, although a lot of work could be accomplished by machine, such work would still need the auditor's professional judgment. This was especially so with respect to the identification of risk, as the auditor needs to maintain their professional scepticism and exercise their experience and sensitivity to data. These requirements would not be affected in any way.

### 3.4.6 Could audit report and audit opinion be jointly signed by people and machine?

Most interviewees (six in all) did not agree with audit report and opinion being jointly signed by people and machine. Their argument was the machine was a tool to support the auditor. They are by no means co-partners and therefore could not jointly sign off on an audit report. In addition, the machine would not be able to assume any responsibility arising from its endorsement of audit report. Indeed, professionally-determined audit opinions and decisions could only be made by the auditor, with the auditor assuming all accompanying responsibility.

Nevertheless, Deloitte's Fan Wei thought that an audit opinion was the culmination of synergistic work of people and machine. Iteration of technology had not altered the reality of human-machine combination.

Figure 3-14: Whether audit report and audit opinion could be jointly signed by human and machine





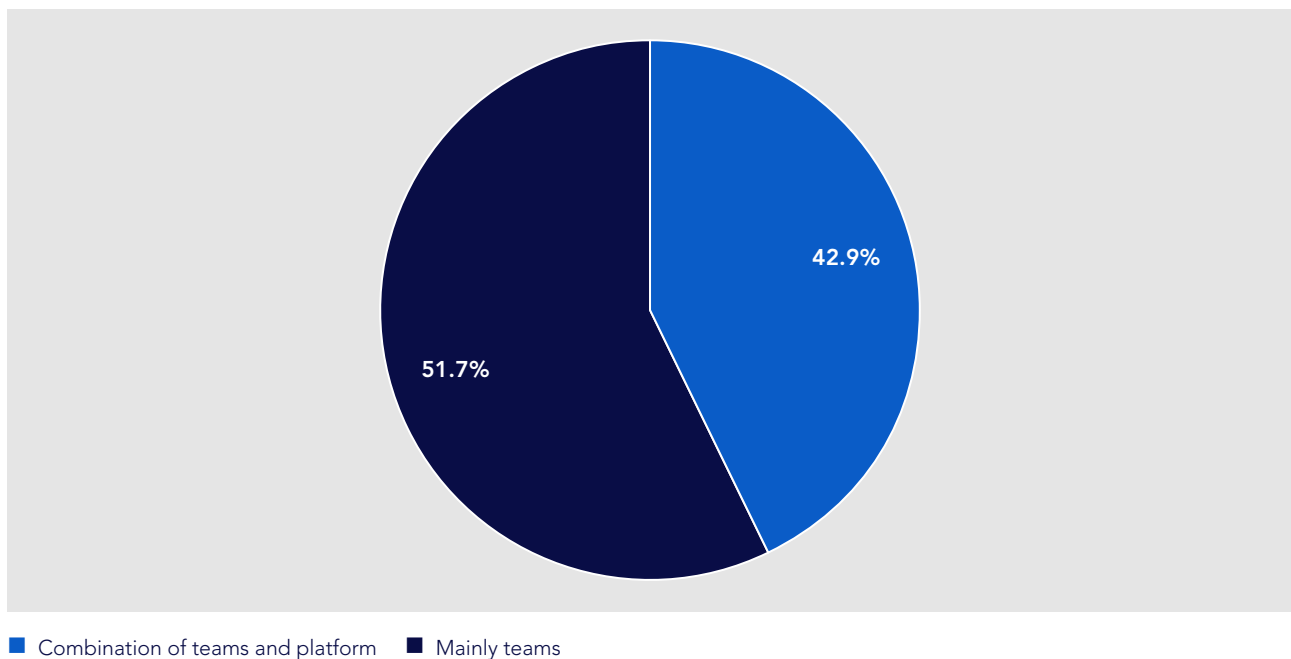
### 3.4.7 Impact of digital audit on the operations of accounting firms

Five of the interviewees felt that digital audit would have limited impact on the organisational structure of accounting firms. Four others however said that it would have some impact. An example would be increased investment in information technology, including establishment of digital teams to develop information technology and IT audit to support or collaborate with other departments. Another example would be to upgrade existing IT department with optimisation of work processes.

Four interviewees said that at present, digital audit would not have significant impact on accounting firm's operations, as audit is still mainly conducted by traditional audit teams. If a client's internal situation is so complex as to make it incompatible with the standards required of digital technology platform, there is no need to spend large amounts on digital technology. Instead, audit teams would be dispatched to the client to collect evidence on-site and if there was any special need, the audit firm would engage technical experts to carry out professional digital analysis.

Three other interviewees said that at present, their firms used a combination of audit team and digital audit platforms, depending on their client's scale and needs. For smaller clients with low level of digitalisation, small-team mode consisting of fewer auditors would be more appropriate. Conversely, for clients with large scale and high degree of standardisation and internal management, their audit might involve several accounting firms or their branches participating in cloud platform audit.

Figure 3-15: Impact of digital audit on accounting firm's operations



## 3.5 Risks of digital audit technology

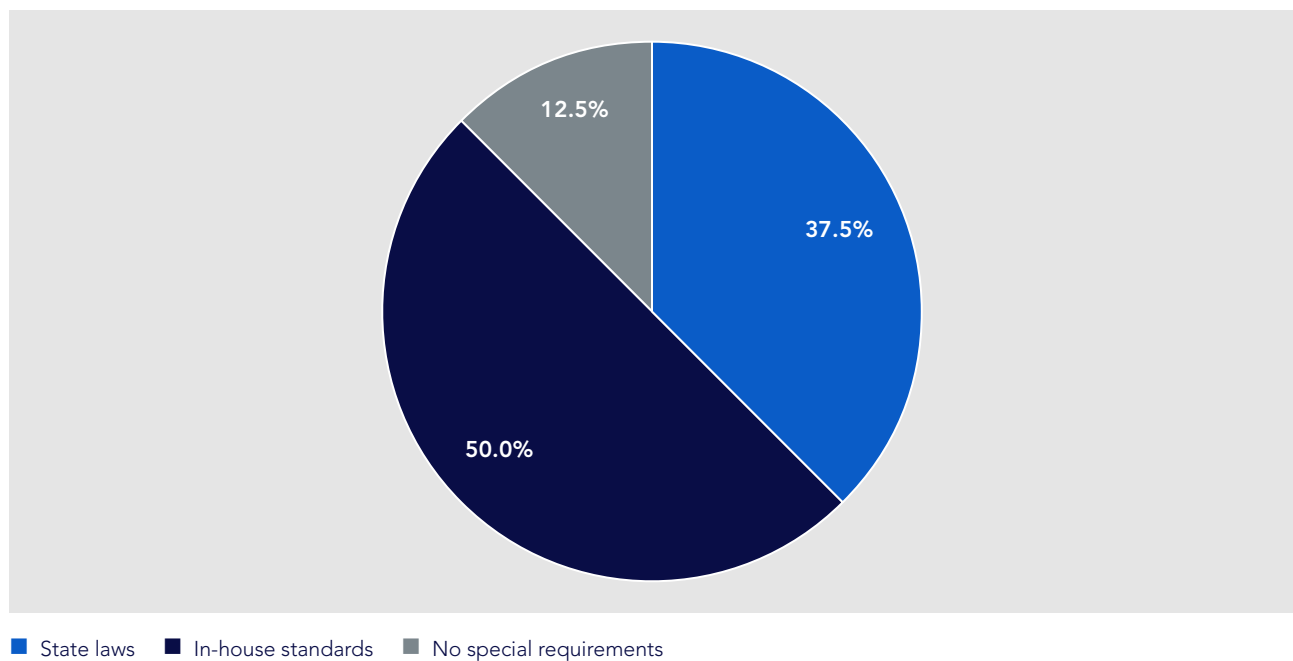
### 3.5.1 Compliance aspect of digital audit

The growth of digital audit should see additional compliance requirements in areas such as data security and data privacy. Compliance with such requirements is extremely important to maintain client trust, reduce legal risk and ensure audit quality.

All nine interviewees thought that digital audit must meet compliance requirements and abide by laws and regulations. Many of them also felt that data security is highly important to compliance. They also stressed the need to abide by laws and regulations during digital audit to ensure the data's lawfulness and security.

According to Fang Chongguang (Diacron), Chinese authorities had yet to promulgate digital audit regulations. As such, any digital audit is at present required to comply with auditing standards. Wang Chao (PwC) emphasised the need to pay great attention to data privacy and security, and digital audit needed to comply with relevant laws like "Data Security Law" and "Personal Information Protection Law". These laws provide for the protection of personal data and sensitive information. In the future, authorities may announce new laws and regulations to regulate digital audit.

Figure 3-16: Compliance aspect of digital audit



### 3.5.2 Monitoring of compliance risk in digital audit

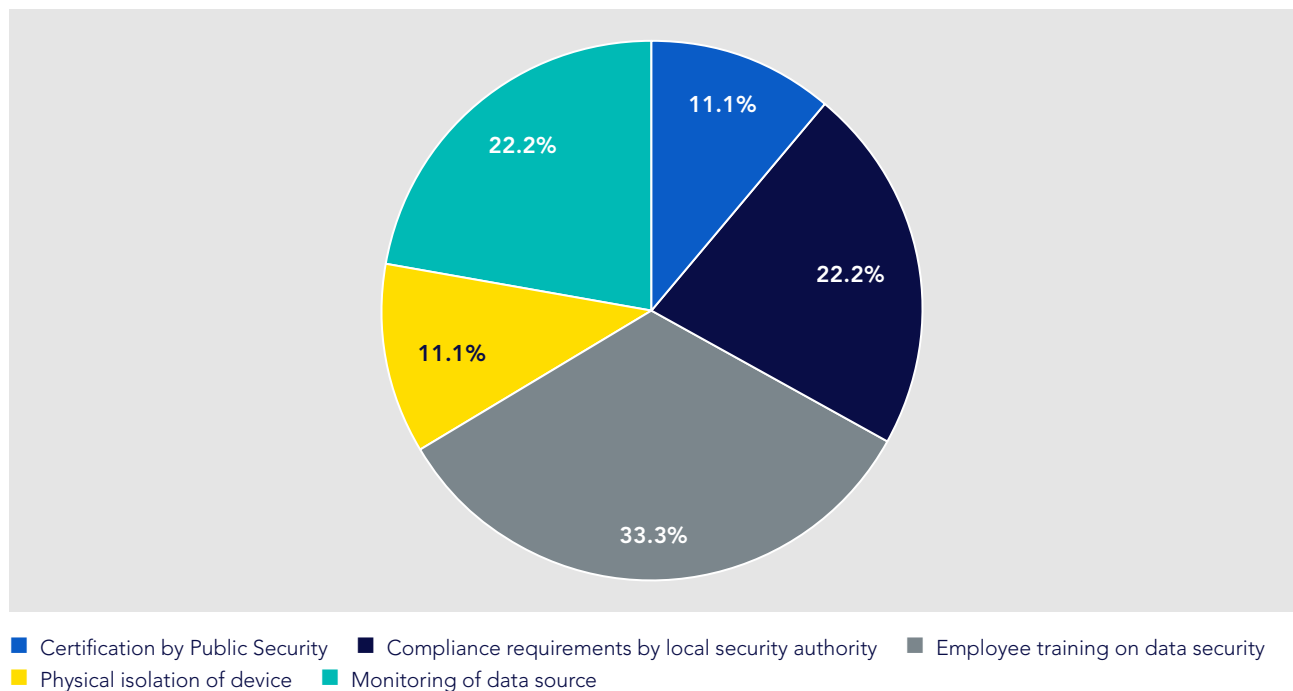
With respect to monitoring compliance risk during a digital audit, the interviewees proposed several different means. According to Wang Chao (PwC), certification by the Public Security Department is a powerful means. It is proof that an accounting firm's data security measures meet national standards. This allows the accounting firm to deliver on its commitment to its clients and partners on data security and reinforces trust.

Complete physical isolation of data devices can also be effective in reducing the risk of unauthorised data access and disclosure. It is potentially a highly secure measure, ensuring access to data only in controlled environments.

Business operations undergoing digital transformation must remain compliant with laws and regulations. Given that laws and regulations differ between jurisdictions, accounting firms should invest resources to ensure their compliance, reducing their legal risk.

As employees are a key factor in data security, reinforcing their data confidentiality awareness is necessary to reduce internal threats and erroneous operations. To this end, employee training helps to foster their understanding of data security and teach them on how to handle sensitive information.

Figure 3-17: Means of monitoring compliance in digital audit



Wang Chen (Pan-China) pointed out that accounting firms should control and manage data at source when handling clients' sensitive data. An example is separating work and personal activities, which is a basic principle for maintaining data security. Use of intranet for work can enhance data security since it is better protected than external networks, preventing data from unauthorised access and disclosure. Use of dedicated mailbox to transmit work documents, including possible encryption of attachments and other security measures, offers additional security to ensure that such work documents would not be accessed by unauthorised individuals during the transmission process. Regular document backup, encrypted document storage and access control should also be put in place.

### 3.3.5 Internal risk of digital audit and its prevention

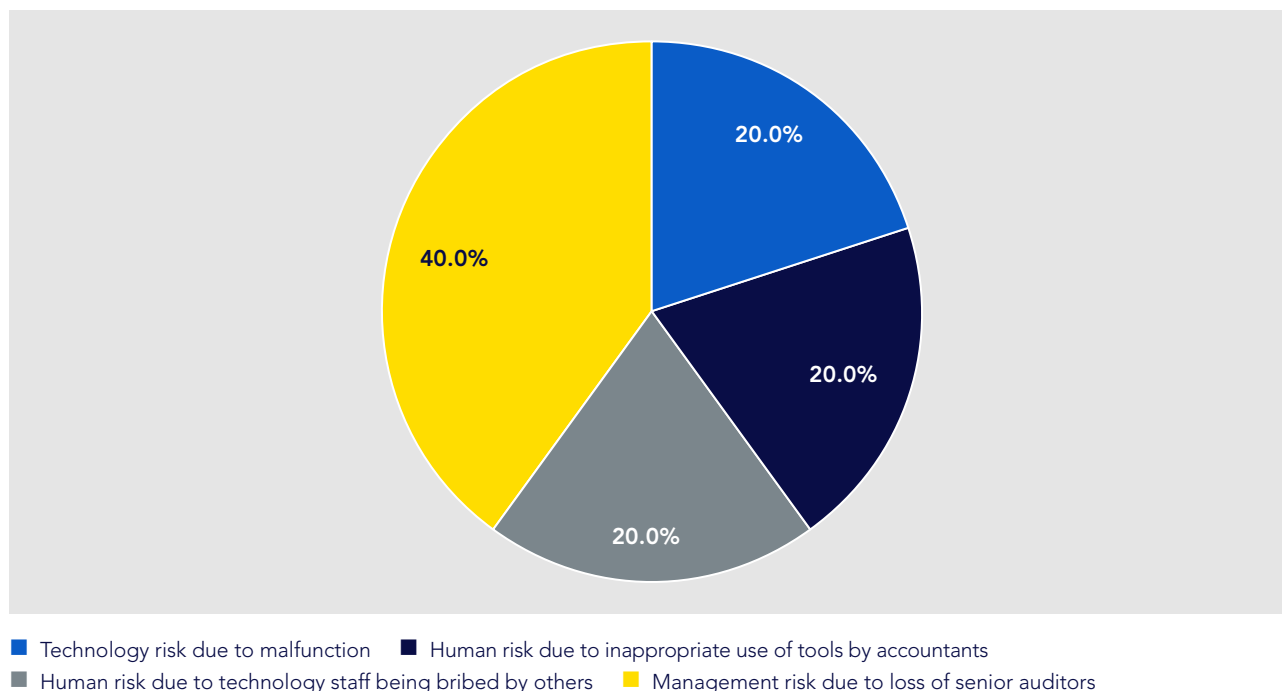
There are many different aspects of internal risk in digital audit, including technology, human and management risk.

**Technology risk:** Wang Chen (Pan-China) pointed out that technical malfunction may pose technology risks, accounting firms should consider the stability and reliability of their digital tools. Fan Wei (Deloitte) thought that the technology risk associated with digital audit is a relatively low; therefore firms should be confident in the reliability of digital audit tools. Liu Yuehua (Shine Wing) mentioned that professional audit staff need to review the data's logic as a means to counter risk.

**Human risk:** Li Ping (BDO) held the view that bribery of technological audit staff by external individuals is an important risk. It might lead to disclosure of key information, information security issue and potential compliance risks.

**Management risk:** Some foundational work may be automated during digital audit, with the risk that auditors lack a comprehensive understanding of the audit process. Over time there may be decrease in the number of senior auditors who are thoroughly familiar with the entire audit process.

Figure 3-18: Digital audit risks



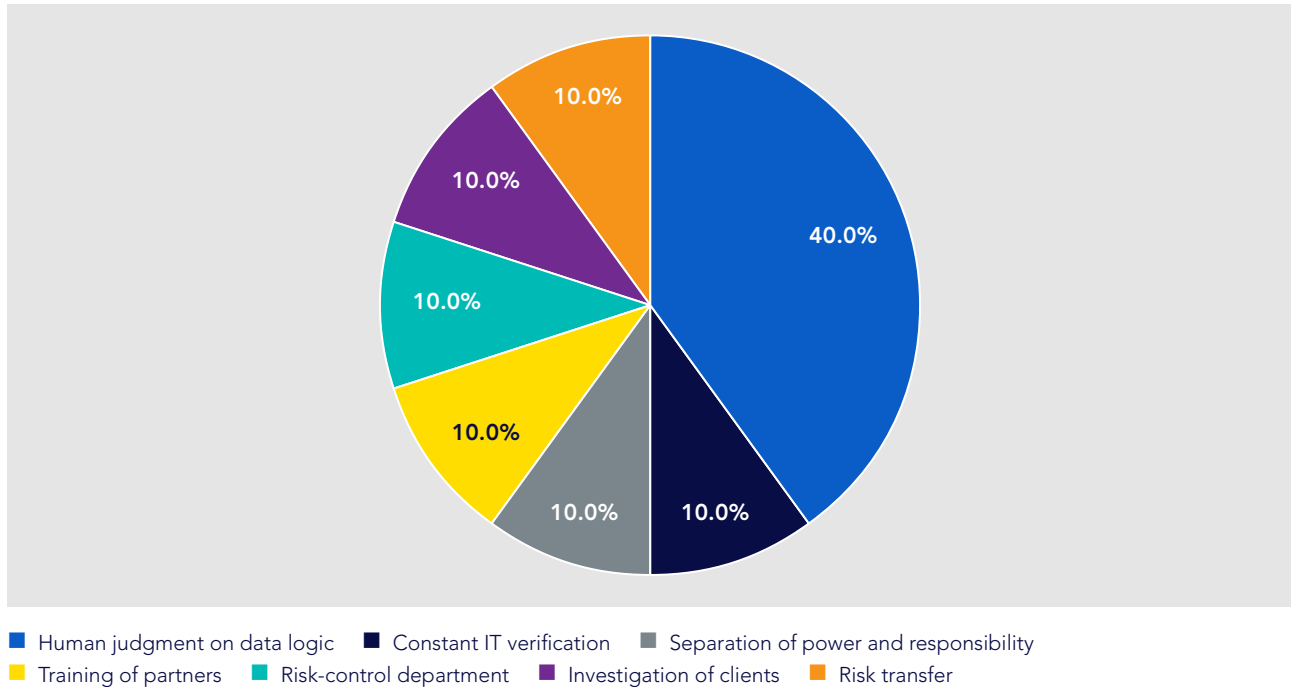
Risk-prevention measures include assessment of reliability of digital tools, review of data logic, and reliance on professional judgment at key moments. Such measures would be helpful in reducing potential risk and enhance the credibility of digital audit.

Prevention of technology risk: Jiang Wanying (EY) mentioned that system loopholes could be found through constantly verifying the system's logic during IT audits. Wang Chao (PwC) said that his firm was the first to have obtained data security certification by Public Security authorities. As such it had professional measures to prevent data leakage. The firm also has partnerships with Microsoft and Google to ensure the security of its technology.

Prevention of human error: Fan Wei (Deloitte) thought that separation of power and responsibility is useful at reducing human risks. Wang Chao (PwC) felt that employee training should be reinforced to raise their risk awareness.

Prevention of management risk: Fang Chongguang (Diacron) felt the need to understand IT system and determining whether it has the capacity to amend data is key to reducing management risk. During digital audit, it would be necessary to carefully appraise the information system of the entity under audit. Wu Ying (Grant Thornton) stressed that when encountering high-risk points during digital audit, the auditor's experience and professional judgment should be relied on instead of placing trust in IT systems. Wang Chen (Pan-China) raised the subject of risk-transfer or control measures. Procurement of insurance and execution of quality-compensation contracts are common examples. Such measures can help alleviate losses for accounting firms and their clients in adverse events or ensure appropriate compensation to the relevant parties.

Figure 3-19: Risk-prevention measures in digital audit



### 3.5.4 How to communicate with clients and achieve mutual trust in the era of digital audit

Maintaining good communication with clients is extremely important to fostering trust in the era of digital audit. It also enhances client willingness to accept digital tools during the audit process. Both Wang Chen (Pan-China) and Jiang Wanying (EY) pointed out that most clients were supportive of digital audit, but they also paid heavy emphasis on complying with relevant laws and regulations. Fan Wei (Deloitte) stressed that candid communication with clients and explaining to them the rationale of digital audit and protection of data security by sharing with them tools and precedents should have priority to help them better understand the digital audit process. Such communication would help establish client trust and enable them to be more willing to adopt digital audit tools. He also mentioned that clients were more concerned with the quality of audit reports and not the digital tools themselves. This is an indication that the core purpose of audit was to provide quality audit opinion and report; digital tools are merely means to achieve this objective. Liu Yuehua (Shine Wing) said that his firm paid great attention to maintaining confidentiality of client data. It ensured that its internal audit tools were all thoroughly tested and verified to ensure clients' data security and protection of clients' lawful interest.

## 4. Conclusion and recommendations

The Study enabled us to collate the views of employees at various levels in Chinese accounting firms on digital audit. Our study results serve as reference for accounting and audit professionals in China on the digital practice and experience of the interviewees and questionnaire respondents. This will no doubt help digital audit in China to become more standardised and regulated over time, enhancing its efficiency and accuracy, and identifying and managing potential risks. It also assists professionals to be more prepared when reviewing complex financial data and the business environment, thereby improving the reliability and sustainability of audit work.

### 4.1 Main conclusions

The Study shows that most accounting firms have already begun adopting digital technologies into their audit processes, having also formulated relevant digitalisation strategies and implementation plans. Technologies such as artificial intelligence, social network analysis, computer-assisted audit tools and natural language processing, were applied in all six phases of audit, albeit to varying degrees. Digital technologies were more commonly used in audit of data-intensive clients (such as those in finance, manufacturing, and retail). Furthermore, clients needed to achieve certain scale for them to be subject to digital audit.

The main objectives of digital audit are to enhance the quality and efficiency of audit work and hence to provide higher quality audit reports. Regulated application of digital audit technology can significantly enhance audit work, improving its quality and efficiency, while reducing human errors and bias. This therefore builds confidence and trust of clients and interested parties. Nevertheless, the impact of digital audit on audit cost needs to be factored into cost-benefit analysis. This is because digital audit involves significant initial investment, sustained development and long-term maintenance of digital audit platforms, even though it can improve work efficiency and hence audit cost in the long run. In addition, a lot of investment is required to recruit IT technicians and provide IT training to existing employees.

Despite significant inroads in digital audit technology, to-date no evidence has been presented to show it completely replacing traditional audit. Digital audit technology remains a tool to support the auditor's work, with accounting skills, professional judgment and scepticism remaining critically important during the audit process.

### 4.2 Recommendations

We have noticed some disparity in the understanding of digital audit among some respondents, particularly junior accounting staff. Some were not aware of the digitalisation strategy of their accounting firm.

Most important of all is that there are numerous potential risks associated with digital audit. This includes technology, human and management risks. Accounting firms needed to tackle such risks and minimise them. At the highest level, the government and industry regulatory authority should consider the benefits of strengthening uniform training for accountants with respect to their digital capability and data security. Accounting firms need to maintain excellent communication internally with employees at all levels, providing them with appropriate training to enhance their understanding of digital initiatives, and improve their digital skills and data security awareness.

The use of digital audit is largely dependent on the client's willingness and level of data standardisation. Thus, it is extremely important to maintain good communication with clients, as it will help to establish client trust and spur them to consider adopting digital audit tools.

Lastly, accounting graduates and accounting professionals need to expand the scope of their skill set, including professional judgment, capability for garnering business insights, learning capability and adaptability, and digital competence. They should also constantly keep themselves up-to-date with the latest digital innovations in the accounting and audit profession.

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