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The Application and Challenges of Modern Technology in Enhancing Internal Audit Competencies

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Abstract

This paper discusses the application and challenges of modern technology in enhancing internal audit capabilities. With the development of information technology, big data, artificial intelligence, cloud computing and other technologies bring new opportunities for internal audit, but also face many challenges. Issues such as the balance between technology investment and cost control, the matching of technology update and auditor's ability, and the integration of technology and process need to be solved. Through the review of related research, the article points out that enterprises should choose appropriate technology solutions according to their own situation and adopt cost-effective strategies to reasonably plan resource input. At the same time, it is necessary to improve the technical ability and quality of auditors, optimise the application of technology, and ensure the compatibility of technical systems. In addition, it is necessary to explore new modes and methods for the integration of technology and auditing. By addressing these challenges, enterprises can make better use of modern technology to enhance their internal audit capabilities and provide strong support for enterprise development.

1. Introduction

1.1 Background

In today's digital era, the rapid development of technology is profoundly changing all fields. As an

important part of enterprise management, internal audit is facing new opportunities and challenges.

With the continuous evolution of information technology, modern technologies such as big data, artificial intelligence, cloud computing and other modern technologies are gradually integrated into all aspects of enterprise operations. For example, in the application of big data technology, some enterprises use big data platforms to carry out real-time analysis and monitoring of massive business data, and auditors are able to quickly identify abnormal transactions and potential risks (Wang Shuang et al., 2024); for example, a large financial institution discovered some hidden frauds in a timely manner through big data analysis (Zhang Yanqun, 2023). In the field of artificial intelligence, intelligent audit robots are able to automatically perform repetitive tasks, such as data entry and verification, which greatly improves work efficiency; the length of audit work was significantly shortened after the introduction of intelligent audit robots in a well-known enterprise. Cloud computing provides flexible data storage and computing resources for internal auditing, enabling auditors to access and process data anywhere, anytime. A multinational company has realised centralised management and efficient sharing of global audit data with the help of cloud computing.

At the same time, the scale of the enterprise is expanding, the business is becoming more and more complex, and the requirements for internal auditing are getting higher and higher. Traditional auditing methods and techniques may seem inadequate in dealing with new business models and complex transaction structures. The application of modern technology has become an inevitable choice to enhance internal audit capabilities and adapt to the needs of enterprise development.

However, the process of applying modern technology is not always smooth. There are many challenges such as high technology implementation costs, difficulties in integrating technology with existing audit processes, and data security and privacy protection. In addition, the technological literacy and adaptability of auditors are also put to the test, and they need to continue to learn and improve in order to master and apply these new technologies.

For enterprises, how to make full use of the advantages of modern technology and overcome the challenges it brings in order to achieve effective enhancement of internal audit capabilities has become an important topic that needs to be studied and solved in depth. In this context, it is of great theoretical and practical significance to study the application and challenges of modern technologies in enhancing internal audit capabilities.

1.2 Motivation

The flood of global economic integration is reshaping the topography of world economics with unprecedented speed and breadth, during which big data and information technology, as the key enablers, are becoming more and more valuable for their use in the field of internal auditing. Chen Junwei's research shows that with the rapid development of big data technology, the internal audit environment of enterprises is also changing (Chen Junwei, 2024). In this context, internal auditors can only meet the requirements of enterprise internal auditing in the era of big data by continuously improving their professional ability and comprehensive quality. These innovative means have contributed to the tendency of the audit process to be more highly accurate and systematic, which not only guarantees solid audit quality, but also achieves significant savings in audit resources and time.

The integration of modern technology and internal audit practice can construct an innovative audit mechanism system. Such a system can not only aggregate and analyse massive amounts of data from multiple channels and formats, but also discover potential risk areas and unusual behaviours with the help of advanced analytical tools and pattern recognition techniques. Meilin emphasises that in the era of big data, the limitations of traditional internal audit evidence collection models, internal audit processes and internal audit techniques are becoming more and more prominent, and how to apply the internal audit changes in the era of big data to the construction of the framework of internal auditors' professional competence is an inevitable trend to enhance the professional competence of internal auditors, activate the value of internal audit organisations, and develop the profession of internal auditing (Meilin, 2019).). The establishment of this system will greatly promote audit practitioners to deepen their understanding and application of big data technology, and then play a more significant role in audit practice.

Strengthening the audit function is not only to improve the accuracy and comprehensive coverage of audit operations, but also to enhance the reliability and trustworthiness of audit conclusions. Zhao Ping said that in this general environment, challenges are also posed to internal auditing, which requires internal auditing to break innovation and transformation in order to ensure audit quality, enhance audit efficiency, and effectively play a supervisory role (Zhao Ping, 2019). This implies that audit practitioners must master deeper data interpretation and analysis skills, as well as possess the ability to apply cutting-edge technologies for risk assessment and decision-making assistance. By doing so, internal audit can not only provide more accurate risk assessment reports and control recommendations for the organisation internally, but also convey fuller and more valuable information to external stakeholder groups, such as investors and regulators, so as to deepen the trust and confidence of these groups in the organisation.

As a result, the introduction and practice of big data technology has had a transformative impact on the internal audit field. By building and optimising the professional skills of internal auditors, audit practitioners will be able to cope with this change more effectively, enhance the effectiveness and quality of their audit work, and develop greater value for the organisation and its stakeholders.

1.3 Questions

Questions1: How do Enterprises balance costs and benefits when implementing modern technology to enhance their internal audit competencies?

Questions2: How to effectively solve the problem of the difficult integration between modern technologies and the existing audit process?

1.4 Research gaps

Despite the fact that the literature on internal audit capabilities has accumulated a wealth of information, including in-depth explorations of the capabilities of modern technologies in the auditing field, there is still a gap in the existing literature in terms of exploring how these advanced technologies can be tightly integrated with the established auditing procedures and strategies in order to enhance the effectiveness of internal auditing. This paucity of scholarly inquiry not only constrains our understanding of the full range of potential internal auditing capabilities, but also hinders the trajectory of innovation and development of the audit practice.

Exploring the integration of modern technology with internal audit practices and tools requires not only the implementation of technology and the development of auditor skills, but also ethical, regulatory and multi-dimensional assessment factors. Through extensive research and practice, we will be able to make better use of modern technology to enhance the effectiveness of internal auditing and create higher value contributions to organisations.

1.5 Research objectives

Objectives1: Explore cost-benefit balancing mechanisms for enterprises to use modern technology to enhance their internal audit competencies.

Objectives2: Analysing and solving the difficulties in integration of modern technology with the audit process in order to enhance competencies

1.6 Research contributions

In conclusion, this study has explored the integration of modern technology and internal audit processes at the theoretical level, and at the same time, it has provided a practical assessment tool for enterprises to enhance the effectiveness of their internal audits through the use of modern technology. The results are of great value to the innovation and progress of the internal audit field, and provide practical guidelines (Figure 1) and reference cases for relevant enterprises and organisations.



Figure 1 Cost-benefit evaluation model

2. Literature Review

In recent years, scholars at home and abroad have conducted extensive research on the application and challenges of modern technology in internal auditing and have achieved some important research results.

On the application of big data analysis in internal auditing some scholars have studied the application methods and effects of big data analysis in internal auditing. For example, Li Haitao and Zhang Zhuo found through empirical research that big data analysis can improve the efficiency and accuracy of internal auditing and discover more potential risks and anomalies (Li Haitao & Zhang Zhuo, 2023). Chen Xuesong,

on the other hand, proposed an internal audit model based on big data analysis, which can achieve real-time monitoring and risk early warning of the operation status of enterprises (Chen Xuesong, 2024).

On the application of AI in internal auditing some scholars have studied the prospects and challenges of AI application in internal auditing. For example, Cheng Pingping argues that AI can replace manual labour to complete some repetitive and regular auditing tasks and improve auditing efficiency (Cheng Pingping, 2024), and Yin Haiyan and Hao Libo examine the challenges and deficiencies faced by AI internal auditing in reality, but at the same time, it may also lead to unemployment and skill degradation of auditors (Yin Haiyan & Hao Libo, 2024). Cheng Ping and Deng Tianyu, on the other hand, proposed an internal auditing system based on artificial intelligence, which can achieve automatic analysis and processing of audit data and improve the quality and efficiency of audit reports (Cheng Ping & Deng Tianyu, 2024).

Regarding the application of cloud computing in internal auditing some scholars have studied the advantages and risks of the application of cloud computing in internal auditing. For example, Li Zhaodong and Li Luoyu argued that cloud computing can provide a more flexible and efficient data storage and processing platform for internal auditing, but at the same time, it may also face problems such as data security and privacy protection (Li Zhaodong & Li Luoyu, 2022). Shen Yanbo et al. on the other hand, proposed an internal auditing process based on the new technological environment of cloud computing, which can realise the centralised management and sharing of auditing data and improve the convenience and efficiency of auditing work (Shen Yanbo et al., 2022).

On the application of blockchain technology in internal auditing some scholars have studied the potential and challenges of the application of blockchain technology in internal auditing. For example, Tao et al. argue that blockchain technology can provide a more secure and reliable way of data storage and transmission for internal auditing, but at the same time, it may face problems such as technology maturity and application scenarios (Tao et al., 2023). Chen Xueyi, on the other hand, proposes an internal intelligent auditing framework based on blockchain technology, which can realise the whole process of tracing and verifying the audit data and improve the authenticity and integrity of the audit data (Chen Xueyi, 2023).

In summary, modern technology has an important application value in enhancing internal audit capabilities, but it also faces some challenges. Enterprises should choose suitable technical solutions and adopt effective coping strategies according to their own actual situation and development strategies in order to give full play to the advantages of modern technology and improve the efficiency and quality of internal auditing. Meanwhile, academics should also strengthen the research on the application and challenges of modern technology in internal auditing to provide more theoretical support and practical guidance for enterprises.

3. Challenges of modern technology in internal auditing

3.1 Balance between technology investment and cost control: high initial investment costs, difficulty in assessing benefits, ongoing maintenance costs

In the application of modern technology to internal auditing, the balance between technology investment and cost control is a key challenge. This involves a number of aspects, including initial investment costs, benefits assessment, and ongoing maintenance costs.

Firstly, initial investment costs are often the primary barrier that organisations face when adopting new technology. Modern technologies typically require significant capital to purchase hardware equipment, software licences, system integration services, etc. For example, the introduction of a big data analytics platform may require the purchase of high-performance servers and storage devices to process and store massive amounts of data. It may also require investment in staff training to ensure they are proficient in the use of the new technology. These initial investment costs may put some pressure on an organisation's financial position, especially for small and medium-sized enterprises (SMEs).

Secondly, benefit assessment is another challenge. As the effects of modern technologies often take time to become apparent and it is difficult to accurately quantify the extent to which they enhance internal audit capabilities, it is often difficult for enterprises to determine the actual benefits of their technology investments. For example, big data analytics can help auditors identify potential risks and anomalies, but it is difficult to accurately assess how much this technology can save an organisation money or avoid losses. This exposes enterprises to a certain degree of risk and uncertainty when deciding whether to adopt new technologies.

In addition, ongoing maintenance costs cannot be ignored. Once an enterprise adopts a new technology, it needs to continuously invest in system maintenance, upgrading and optimisation to ensure that it operates properly and performs optimally. For example, software needs to be regularly updated to fix bugs and improve functionality, and hardware equipment needs to be regularly maintained and replaced to ensure its performance and reliability. In addition, investments in data backup and recovery are required to prevent data loss and corruption. These ongoing maintenance costs may increase over time, placing a burden on the financial position of the organisation.

To address the challenge of balancing technology investment with cost control, enterprises need to take a number of measures. Firstly, enterprises should conduct adequate research and analysis before making technology investments, assess the costs and benefits of different technology options, and choose the most suitable technology solution for them. Second, enterprises should formulate a reasonable budget plan to ensure that technology investment does not exceed the financial capacity of the enterprise. In addition, enterprises should establish an effective benefit assessment mechanism to regularly evaluate the effect of technology investment and adjust the investment strategy in a timely manner. Finally, enterprises should strengthen the maintenance and management of the technology system to improve the stability and reliability of the system and reduce maintenance costs.

In conclusion, the balance between technology investment and cost control is an important challenge faced by modern technology in internal auditing. Enterprises need to take this issue seriously and take effective measures to meet the challenge in order to give full play to the advantages of modern technology and improve the efficiency and quality of internal auditing.

3.2 Mismatch between technological upgrades and auditor competencies

The rapid advances in the field of modern technology have undoubtedly revolutionised the practice of internal auditing, but they have also been accompanied by a series of tests. The high rate of technology iteration puts newly acquired skills at risk of rapid obsolescence. This accelerating trend of technological evolution puts forward the requirement of continuous learning for audit practitioners, aiming to maintain and enhance the timeliness and relevance of their professional knowledge. According to Zhao Ping, the integration of information technology into the ways and means of internal auditing in conjunction with the use of information systems in the enterprise requires auditors to have two competencies at the same time: strong expertise in auditing and, at the same time, a certain level of computer application skills (Zhao, 2024). For example, technological advances in the fields of artificial intelligence and machine learning are rapidly changing, and their role in auditing practice has jumped from basic job automation to cover complex pattern recognition and forward-looking analysis. Audit practitioners must understand the fundamentals of these technologies and be able to apply them to enhance the coverage and depth of their audit work. This requires not only proficiency in existing technologies, but also a keen eye for emerging technologies and the ability to absorb them quickly.

Distributed ledger technology - blockchain - brings unprecedented transparency and immutability to the auditing field, which plays a key role in enhancing the trustworthiness of audit evidence. However, to realise the full potential of blockchain technology, audit practitioners must be familiar with the principles of cryptography, the working mechanisms of distributed systems, and the specialised auditing techniques of smart contracts.

The need for increased competence in data analysis, programming skills and information systems management is driving the need for audit practitioners to not only understand how data is accessed and constructed, but also to be able to use programming techniques to process and analyse large data sets and to assess and apply the security and performance benefits of information systems. Failure to possess these skills may limit the auditor's effectiveness in an increasingly data-dependent audit environment.

While audit practitioners recognise the critical importance of technology, they may encounter implementation barriers in practice. Adopting emerging technologies often requires them to think outside the box and adopt more innovative and adaptive strategies to meet challenges. Data analytics, for example, not only tests technicians' professional skills, but also requires a deep understanding of business processes and the ability to extract insightful information from large amounts of data.

3.3 Challenges to the integration of technology and processes: inertia of traditional processes, system compatibility issues, complexity of process re-engineering

The integration of technology and processes is a key challenge in the application of modern technology to internal audit. This involves a number of aspects, including the inertia of traditional processes, system compatibility issues and the complexity of process re-engineering.

First, the inertia of traditional processes is a major obstacle. Many organisations have developed fixed audit processes and methodologies over a long period of time in their operations, which may be well entrenched and considered effective. However, the introduction of modern technology may require these legacy processes to be adapted and optimised to suit the requirements of the new technology. This may cause resistance from employees who will need to change their ways of working and habits. In addition, the inertia of traditional processes may lead to a lower level of acceptance of the new technology by the organisation, thus affecting the effectiveness of the technology's application.

Secondly, the issue of system compatibility is also an important challenge in the integration of technology and processes. In modern enterprises, there are usually multiple information systems, which may be provided by different vendors and use different technologies and standards. When new technologies are introduced, there is a need to ensure that they are compatible and integrated with existing information systems. Otherwise, it may lead to problems such as data inconsistency and information silos, thus affecting the efficiency and accuracy of auditing work. Resolving system compatibility issues requires

companies to invest a lot of time and effort in system evaluation, testing and integration work.

Finally, the complexity of process reengineering is also a challenge to the integration of technology and processes. Process reengineering refers to the redesign and optimisation of an enterprise's business processes to improve efficiency and quality. When new technologies are introduced, it is often necessary to reengineer existing audit processes to take full advantage of the new technologies. However, process re-engineering is a complex process involving the participation of a number of departments and personnel, and requires a comprehensive adjustment and optimisation of the organisational structure, business processes and management system of the enterprise. This may cause turmoil and conflict within the enterprise, thus affecting the effectiveness of technology application.

In order to meet the challenges of technology and process integration, enterprises need to take a series of measures. Firstly, enterprises need to strengthen the training and education of their employees to improve their knowledge and understanding of new technologies and their acceptance of process adjustments. Second, enterprises need to strengthen the assessment and testing of system compatibility to ensure that new technologies can be compatible and integrated with existing information systems. Finally, enterprises need to develop a detailed process reengineering plan, clear process reengineering goals, scope, steps and responsibilities, and strengthen the management and supervision of the process reengineering process to ensure the smooth progress of process reengineering.

In short, the integration of technology and process is a key challenge in the application of modern technology to internal audit. Enterprises need to fully recognise the importance of this challenge and take effective measures to meet it in order to improve the efficiency and quality of internal auditing.

3.4 Legal regulations and ethical constraints

The rapid evolution in the field of technology has brought unprecedented changes and challenges to the practice of auditing. The current body of legal norms may not have been able to keep pace with changes in the technological environment, resulting in legal ambiguities in the adoption of emerging technologies by audit practitioners. Such uncertainty may permeate the audit decision-making process, raising the level of risk in audit operations and potentially leading to legal disputes over audit conclusions.

Contemporary technological practices frequently involve the collection and analysis of large-scale data, which poses complex requirements for audit practitioners, who not only need to master the necessary technological tools, but also need to ensure the transparency and fairness of audit operations under a strict legal framework of data protection. Specifically, when auditors use big data analytics, they must verify the legitimacy of the data acquisition channel, the standardisation of the processing process, and effectively protect personal information to prevent privacy leakage. In addition, auditors are responsible for ensuring that the interpretation and application of data analysis conclusions are free from individual bias and maintain objectivity.

The implementation of technology sometimes ventures into ethical and moral ambiguities, especially when relying on AI to make decisions. The algorithmic logic of AI may lead to unfair or biased results due to uneven training data, flawed algorithmic construction, or lack of transparency. It is therefore important for reviewers to step in and implement an audit of the AI's judgement process to ensure that it is fair and unbiased, and to take human review measures where required.

An important challenge in the audit arena is the potential risk of technology misuse, an issue that also deserves close attention in auditing. While contemporary technology has greatly enhanced the efficiency and ease of audit operations, it can be misused, for example, to perpetrate fraud or disguise improper operations through advanced technological means. Audit practitioners must therefore be vigilant in not only recognising the signs of technology misuse, but also developing and implementing effective strategies to defend against such risks in order to maintain the purity and integrity of the audit process.

In today's global business arena, the internal audit practice faces compliance challenges across different jurisdictions, which undoubtedly adds to the complexity of the audit process. Audit practitioners must familiarise themselves with and adapt to multiple legal systems to ensure that their audit operations are compliant globally. This not only requires auditors to have an international perspective, but also emphasises the importance of cross-cultural communication and cooperation skills.

In the face of these challenges, audit firms need to adopt proactive strategies that include strengthening education on legal norms and ethics, enhancing the technical skills and knowledge of auditors, building defences against misuse of technology, and improving international cooperation and communication. In addition, audit firms should work closely with legal counsels, technologists, and related organisations to cope with the challenges posed by technological advances. Through these initiatives, audit institutions can ensure the quality of audit operations and public trust, laying a solid foundation for the long-term development of the organisation.

4. Strategies to Address Challenges and Suggestions for

Future Development

4.1 Cost-effective strategy. Find cost-effective technical solutions, rationally plan the phasing of resource inputs, and avoid large-scale one-time investments.

A cost-benefit strategy is essential in the application of modern technology to internal auditing. Enterprises need to look for cost-effective technology solutions to improve the efficiency and quality of internal auditing while controlling costs.

Firstly, enterprises should conduct sufficient market research and technology assessment to understand the advantages, disadvantages and scope of application of different technology solutions. Through communication and comparison with vendors, choose the technology solution that best suits the enterprise's needs and budget. At the same time, enterprises may also consider adopting open-source technologies or cooperating with other enterprises to share technology resources in order to reduce technology procurement costs.

Secondly, rational planning of the phasing of resource investment is the key to achieving a cost-benefit balance. Enterprises should formulate a long-term technology investment plan in accordance with the needs of internal auditing and the trend of technological development. In the plan, the investment focus and objectives of each stage should be clearly defined, and one-time large-scale investment should be avoided, so as not to cause waste of resources and excessive risk. For example, companies can first introduce some basic technology tools, such as data analysis software and automated audit tools, to improve audit efficiency and accuracy. Then, according to business needs and technological development, they can gradually introduce more advanced technologies, such as artificial intelligence and blockchain technology, to realise the intelligence and automation of auditing.

In addition to looking for cost-effective technology solutions and rationally planning the phasing of

resource investment, enterprises may also consider adopting a leasing or subscription model to reduce technology costs and obtain better support and services by establishing a long-term partnership with technology vendors, so as to avoid one-off large-scale investment. One-time large-scale investment may lead to excessive financial pressure and increased risks for enterprises, and may also result in wastage of technological resources. Therefore, enterprises should reasonably arrange the scale and rhythm of technology investment according to actual demand and budget, and avoid blindly following the trend and over-investment.

In addition, enterprises should also focus on the continuous optimisation and upgrading of technology in order to improve the efficiency and effectiveness of technology use. Through regular technology assessment and updating, problems and deficiencies in the application of technology should be discovered and solved in a timely manner to ensure that the technology always maintains a leading position. At the same time, enterprises should also strengthen the training and support for technicians to improve their technical level and application capabilities in order to better utilise the advantages of technology. Enterprises can improve the efficiency and quality of internal auditing while controlling costs and achieve sustainable development.

4.2 Upgrading the technical skills and competence of auditors

Strengthening the technological capabilities and literacy of the audit team is seen as a key strategy for internal audit to adapt to the digital transformation. Therefore, we need to plan a comprehensive technology development programme that includes education in core technology areas such as data analytics, programming languages (e.g. Python, SQL), cloud computing and artificial intelligence. At the same time, auditors should be motivated to engage in a continuous learning process to broaden their technological horizons through various channels such as online courses, seminars and workshops. Support them to obtain professional certifications such as CISA and CFA to enhance their professional authority. Through periodic skills assessments, we identify the technical strengths and weaknesses of our team, so that we can tailor a personalised development path.

We create real-world technical application scenarios for our auditors, including participating in data analysis projects and building automated auditing processes, with the aim of strengthening their practical skills. Establishing a technical guidance mechanism, whereby senior experts lead new employees and auditors whose skills need to be upgraded, in order to pass on knowledge and experience. Promote cross-functional communication and close cooperation between the audit department and the IT and data analysis teams to achieve knowledge sharing and complementary skills. Organise technical workshops and online seminars on a regular basis, inviting industry authorities to share the latest technical trends and efficient practices. Encourage auditors to join the technical community, interact with peers, learn new knowledge and stimulate innovative thinking.

The implementation and validation of advanced technological tools to foster innovative thinking among auditors and motivate them to explore the use of technology in audit practices, with the aim of improving efficiency and audit quality. Enhance ethical and legal education to ensure that technology is implemented in accordance with current standards. Provide a technology leadership development path for auditors with high potential to develop their leadership skills. In addition, we will build a feedback system to collect auditor feedback on our training programmes and technology support. Through these holistic strategies, we will build a skilled audit workforce that is well suited to the demands of digital change.

4.3 Optimise the application of technology and do system compatibility testing in advance to ensure smooth interfacing between technical systems to improve audit efficiency and accuracy.

In the application of modern technology to internal auditing, compatibility and smooth interfacing of technological systems are critical. If different technical systems do not work effectively with each other, the efficiency and accuracy of the audit work will be affected.

Firstly, system compatibility testing in advance can help identify and resolve potential technical problems. When introducing new technology systems or upgrading existing systems, incompatibility with other systems may occur. By conducting compatibility tests, these problems can be detected before actual application and appropriate measures can be taken to resolve them, avoiding unforeseen situations in the auditing process.

Secondly, ensuring that technical systems can interface smoothly with each other can improve the efficiency of data flow and sharing. Internal auditing involves data from multiple departments and systems, such as financial systems and business systems. If these systems can not achieve effective docking, auditors need to spend a lot of time and effort to collect and organise data, which seriously affects the efficiency of auditing. By optimising the application of technology and achieving smooth docking between systems, automatic transmission and sharing of data can be achieved, greatly improving audit efficiency.

In addition, the compatibility and smooth docking of technical systems can also improve the accuracy of auditing. If data between different systems are inconsistent or incorrect, it will lead to inaccurate audit results. By ensuring compatibility and data accuracy between systems, audit errors can be reduced and the reliability of audit results can be improved.

In conclusion, optimising the application of technology, testing system compatibility in advance, and ensuring smooth interfacing between technical systems are of great significance in improving the efficiency and accuracy of internal auditing. Enterprises should pay attention to the compatibility and smooth docking of technology systems, and take effective measures to solve the problem, in order to give full play to the role of modern technology in internal auditing.

4.4 Exploring new models and approaches to integrating technology and auditing

Exploring new strategies and means of integrating technological innovations into the audit practice, with the intention of continuously adapting and incorporating emerging technologies to enhance the effectiveness and quality of internal audit work. This involves adopting cutting-edge data analytics solutions to process and analyse large-scale and complex data sets, applying machine learning and artificial intelligence logic to detect hidden risks and anomalous patterns, and implementing blockchain technology to ensure data integrity and immutability. With these technologies, audit practitioners are able to more thoroughly analyse business processes, more accurately assess risks, and provide greater value-add in audit insights. Additionally, cloud computing empowers the audit community with powerful data storage and computing support, increasing the flexibility and scalability of audit work. Audit practitioners have remote access to data resources and specialised audit software, enabling cross-regional collaboration and real-time monitoring of audit processes. In addition, with the innovation and development of mobile audit applications, audit operations have broken through the traditional time and space limitations, and auditors

are able to carry out data collection and pre-processing and analysis work at any time and in any place, which further enhances audit efficiency and response speed.

In order to promote the in-depth integration of technology and auditing work, internal audit teams need to build a set of continuous education and training system, aiming to enable auditors to acquire the necessary technical knowledge and skills, which covers an in-depth understanding of existing technologies and a keen grasp of future technological trends. By participating in technical seminars, webinars, and being active in technical communities, audit practitioners can interact with the best in the industry, learn from the best practices, and stimulate innovative thinking.

Fostering technology leadership should also not be overlooked, and audit departments should create opportunities for auditors with development potential to lead technology projects aimed at enhancing their technology leadership skills. In addition, personalised learning paths and resources should be tailored to the needs and career goals of each auditor to ensure that each member of the team is able to find their own personal growth trajectory in the technology integration process.

Ultimately, a robust feedback loop and continuous improvement mechanism is critical in promoting the integration of technology and auditing. By systematically collecting feedback from audit practitioners on technology tools and implementation strategies, audit teams can continue to improve their education programmes and technical assistance systems to ensure that technology can accurately address the substantive challenges of audit practice, thereby enhancing the quality and effectiveness of audit operations. By adopting such a comprehensive strategy, internal auditing will be able to integrate more smoothly into the development trend of the digital era and promote the deep integration of technology and auditing practice.

5. Conclusion

In the digital era, internal auditing is changing, and modern technology brings new tools and challenges. This study analyses its application in enhancing auditing capabilities and proposes strategies to address them, believing that a continuous combination of technological innovation and auditing practice will enable internal auditing to better serve enterprises and stakeholders and provide accurate and comprehensive results.

In today's digital era, the field of internal auditing is undergoing an unprecedented period of transformation. Cutting-edge technologies such as Big Data, Artificial Intelligence, Cloud Computing and Blockchain are empowering the practice of internal auditing with a range of powerful tools designed to enhance the effectiveness, quality and insights of the audit process. These innovations enable audit practitioners to effectively address the challenges of processing and analysing huge amounts of data, uncovering risk dynamics, improving decision-making accuracy, and ensuring that transparency and objectivity in the audit process are maintained.

With the rapid evolution of technology, the internal audit field is facing a series of new challenges. How to find a balance between technology investment and cost control, the contradiction between technology iteration and auditor skill matching, the complexity of integrating technology into the existing audit process, as well as complying with laws, regulations and ethical requirements are all key issues that need to be resolved. To address these challenges, companies need to adopt a cost-effective strategy, allocate resources scientifically, and strengthen technical training and quality enhancement for audit teams to promote the optimisation of technology applications to ensure seamless integration of technology platforms.

Furthermore, developing new strategies and tools for integrating technology innovation and audit practice, building a continuous education and training system and a technology leadership programme, and setting up an efficient feedback loop and a continuous optimisation mechanism are all important for promoting the deep integration of technology and audit. By adopting these strategies, internal auditing will be more responsive to the needs of the digital age and create higher value for organisations.

This study examines the use of contemporary technology in enhancing the effectiveness of internal auditing and the challenges it faces, and proposes corresponding strategies. It is believed that the continuous integration of technological innovations and auditing practices will enable internal auditing to serve enterprises and various stakeholders more effectively and ensure the accuracy and comprehensiveness of audit results. With the continuous progress of science and technology and the continuous innovation of auditing practice, internal auditing is bound to occupy a more crucial position in the development process of enterprises, laying a solid foundation for the stable operation and sustainable growth of enterprises.

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