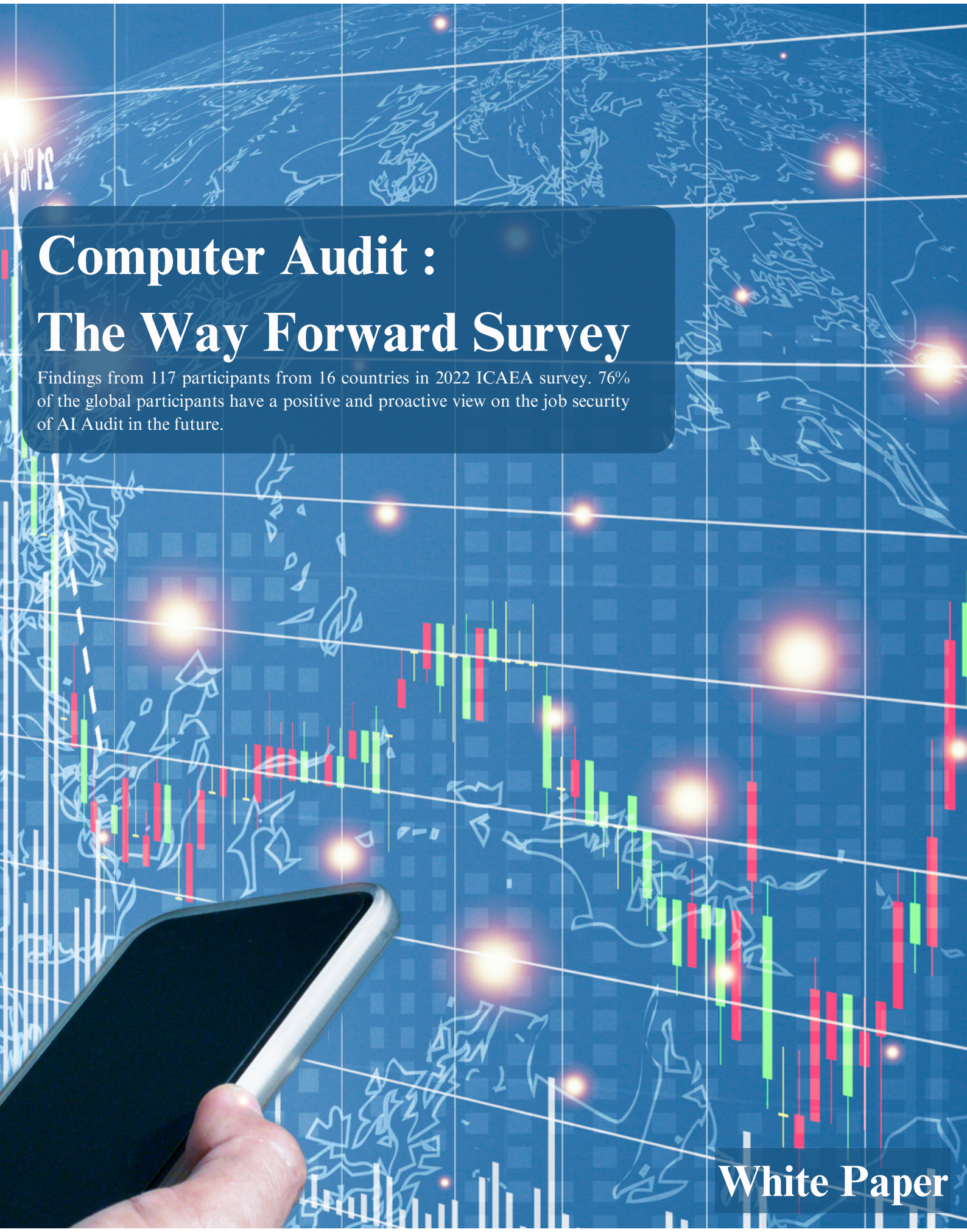
ICAEA INTERNATIONAL



# Computer Audit : The Way Forward Survey

Findings from 117 participants from 16 countries in 2022 ICAEA survey. 76% of the global participants have a positive and proactive view on the job security of AI Audit in the future.

**White Paper**

https://www.icaea.net/

## Introduction

76% of the global participants have a positive and proactive view on the job security of AI Audit in the future. This data point comes from 117 participants from 16 countries and regions who responded to the ICARA's 2022 survey on the direction of computer auditing in the future.

As a result of the COVID-19 pandemic, online trading and remote work have become the new norm, leading to the emergence of new economic models. However, these changes also increase the possibility of accounting errors, necessitating more frequent updates to the audit scope. In order to ensure accuracy, auditors need to perform higher quality audits, and computer-based audit methods have received attention in the era of artificial intelligence. Despite the many possibilities that AI auditing provides for future development, its actual application has not yet been fully realized.

In response to the demands of auditing, the adoption of new technology, and the emergence of the AI era, the development of computer-based auditing and the skills of auditors are essential factors. To gain insight into the integration of AI technology into modern internal control processes, ICAEA conducted a benchmarking survey titled "Computer Auditing: The Way Forward Survey" in 2022 to examine how auditors are learning AI technology for their modern internal control process. It consisted of 15 questions and responses were anonymous.

The purpose of this survey was to gather people’s opinions on the Future of Computer Auditing. Respondents provided relevant data about themselves, including their role within the organization and their industry, to provide context and perspective to their answers. The information collected from the returned surveys has led to this publication, which we hope internal auditors will find interesting. The date of the last response was November 5, 2022.

1 | SURVEY CONCEPT

The "2022 Computer Auditing: The Way Forward Survey" provided a questionnaire for ICAEA internal members and was publicly released to the education sector. The main survey subjects came from six groups: the auditing industry (registered accountants), regulatory bodies (FSA, UK FRC), the business world (internal auditors), research institutions (universities/graduate schools), software developers, and finance and auditing professionals. All were interested in computer auditing, including education and data analysis.

The survey aimed to "understand the current state, challenges, and future of computer auditing technology and skills" and to learn about auditing technology from five perspectives. Through the survey and analysis, the readers can have a platform for sharing open information and gain insight into the current situation, challenges, and future direction of computer auditing

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development.

Tittle：2022 Computer Auditing: The Way Forward Survey
Survey Link：https://reurl.cc/pLxxoe
Description： International Computer Auditing Education Association (ICAEA) is conducting a survey to further understand how auditors are learning AI technology for their modern internal control process.

- Computer auditing skills
- Collaborative computer auditing techniques
- AI learning technology
- Job security
- Skill gaps

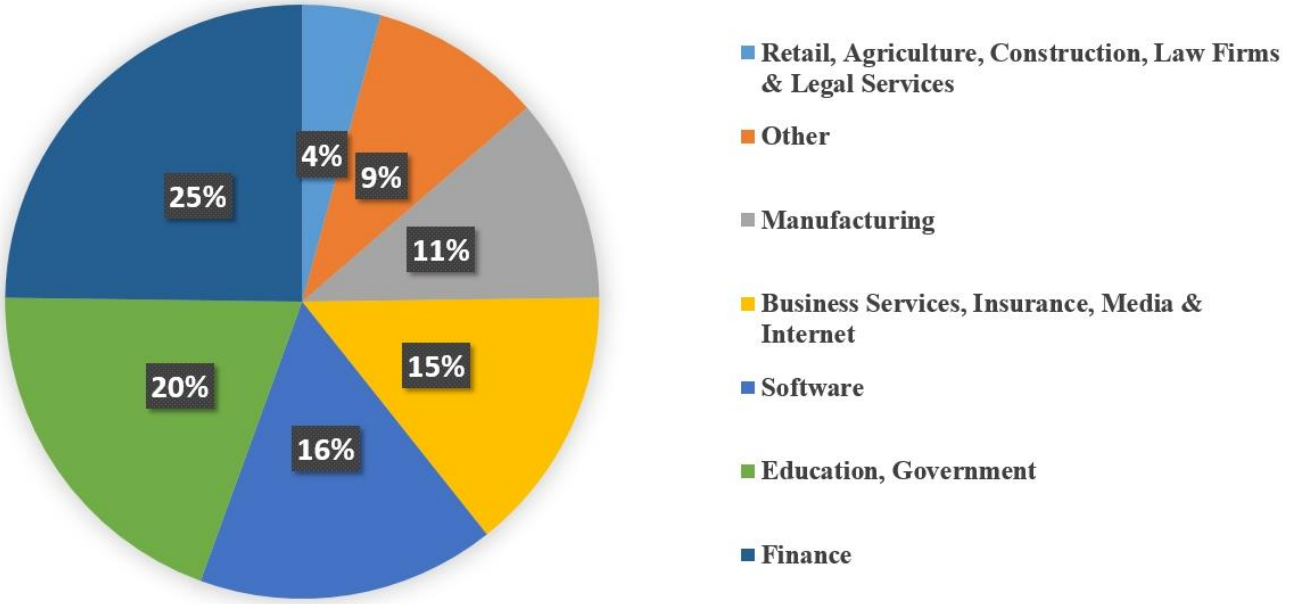
2| OVERVIEW OF PARTICIPANTS
(1) Classified by country
The data shows that 16 countries participated in the survey, with over 90% of the participants from Asia. Suggest that, in comparison to the relatively stable auditing market in Europe and America, the Asian region shows a higher level of concern and a stronger desire to acquire more information on the future developments of auditing.

(2) Breakdown by Industry and Primary Function of Participants
Among the participants of this survey, 25% of them are working in the Finance industry, followed by the Software, Education, and Manufacturing industries.
Despite coming from various industries, Internal Audit was the main job function among 37% of the participants in this survey. Overall, categories directly related to finance and auditing comprised 83% of the participants, providing credible analytical data on the practical current information and development direction for the future of computer auditing.

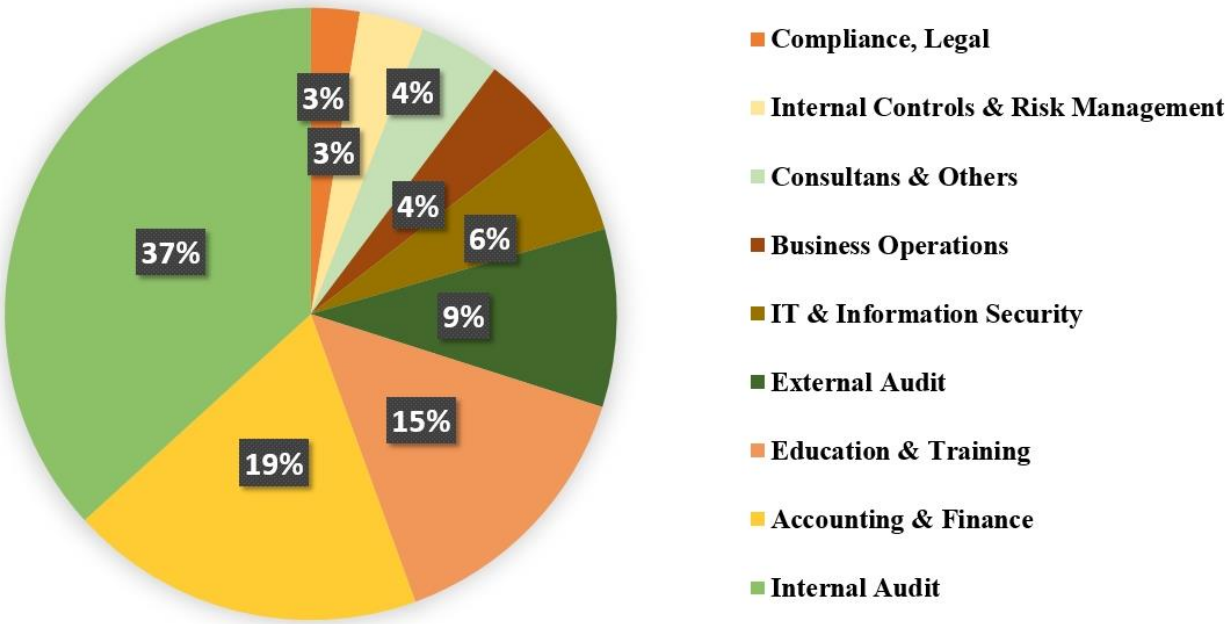
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Many individuals from diverse industries who are interested in auditing participate in the survey, making the historical data gathered diverse.

**Question:** What is your Industry?




**Question:** What is your Primary Function?



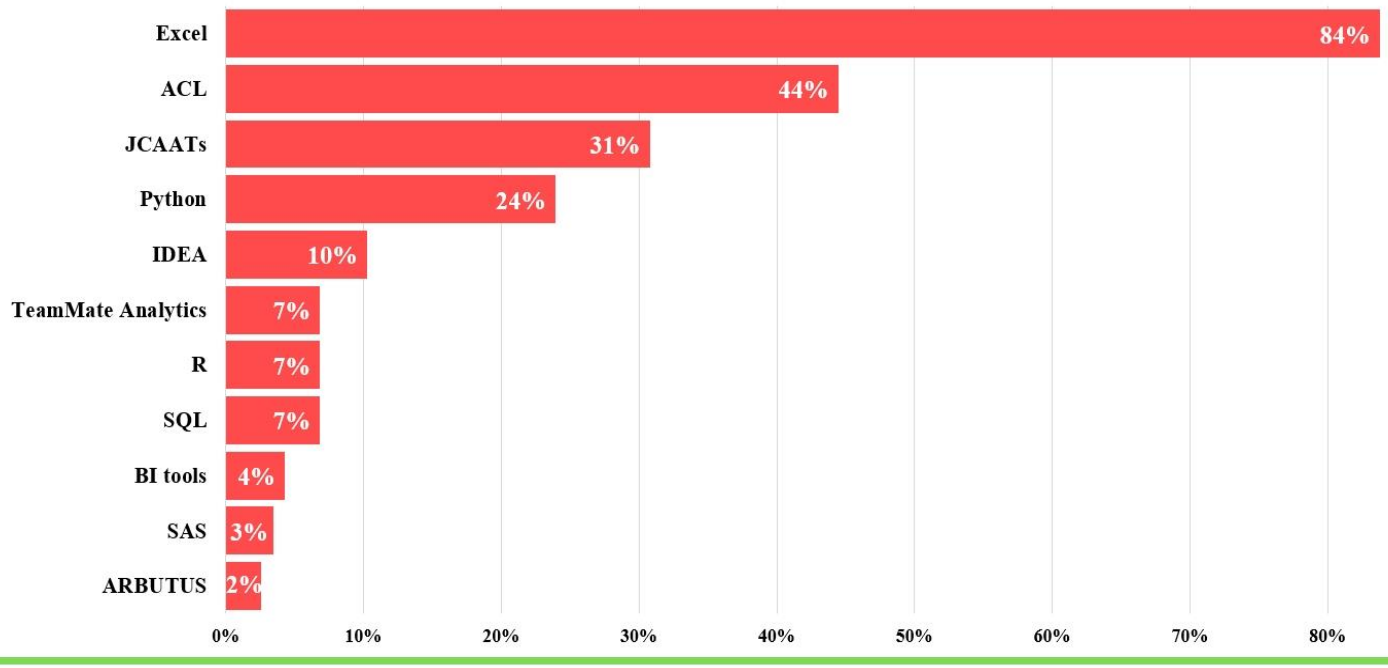

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## 3| CURRENT SITUATION ANALYSIS

(1) The Audit Data Analysis Team used Computer-Assisted Audit Techniques (CAATs) in this survey, where 9 software options were provided for participants to choose from, with an additional free-fill option to capture software not listed. The results showed that 83.8% of participants used Excel, a common tool among audit teams. ACL was the second most commonly used software. Additionally, 51.6% of teams using Excel also used other software, while 57.7% of ACL users also used other software. Among teams that used multiple software options, 30.2% used ACL and Excel, while 27.9% used ACL, JCAATs, and Python together. Furthermore, it is worth noting that 23.9% of participants of Python, a programming language closely related to AI, have started using it for analyzing audit data. This suggests that audit teams are becoming aware of the future development trend of intelligent auditing and the crucial importance of preparing and training for intelligent development in advance. These findings can serve as a reference for audit teams seeking to improve their use of CAATs.

More than 35% of auditors utilizing two or more tools. However, 14% of auditors do not use CAATs at all, and JCAATs and Python have been gaining popularity quickly.

**Question:** What CAATs does your team use for audit data analytic?




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(2) Audit Team Related Activities

I. In the analysis of relevant data, 65% of the teams are currently executingt, which is the most commonly used approach by teams.

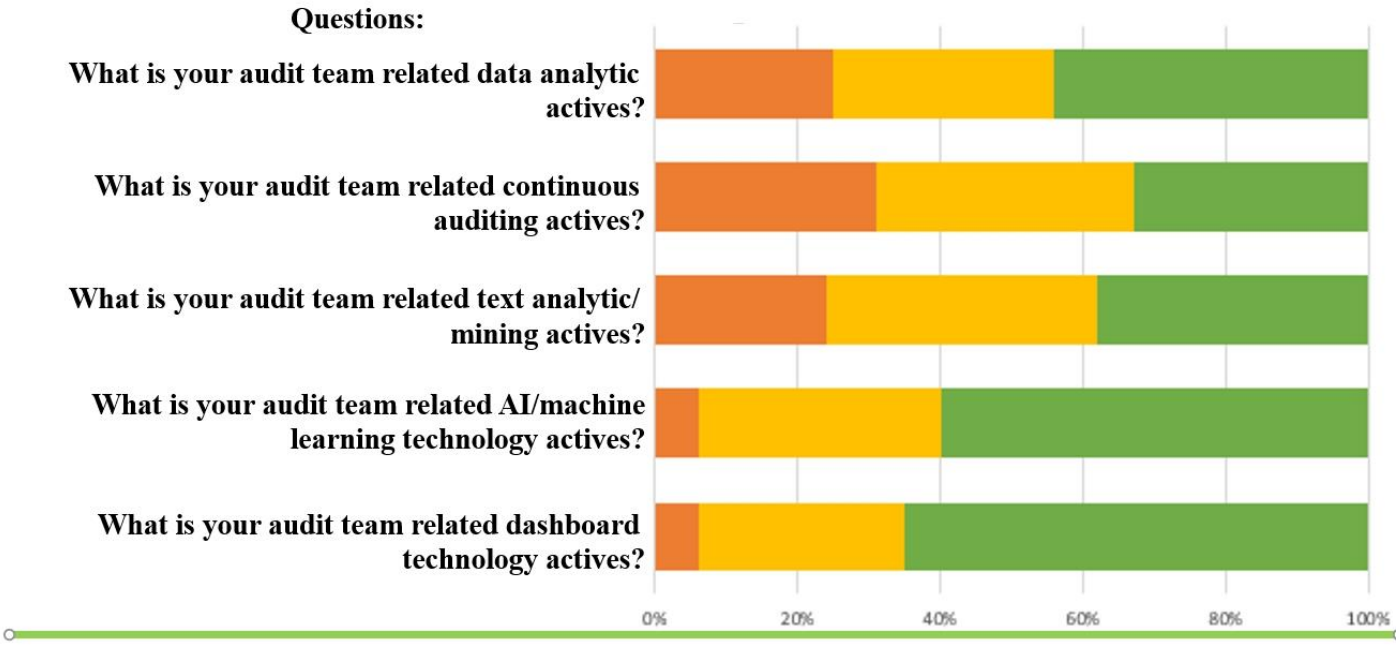
II. 60% of the participating audit teams adopted Related Continuous Auditing, and 34% planned to conduct audits in this way, indicating that there is still room for growth in this field. These teams may be considering the benefits of continuous auditing.

III. The proportion of audit teams adopting Text Analytics/Mining is significantly lower among the participants, with only 39% having implemented it, and over 61% not using Text Analytics/Mining as an audit method, of which 62.5% have plans to adopt this method.

IV. Artificial intelligence technology has become increasingly prevalent in various industries, but its use in the auditing industry remains limited. Only 33% of auditors currently use AI technology as an auditing assistant, and this is the smallest proportion of auditors who are willing or have plans to adopt AI auditing technology.

V. According to the survey, 39% of auditing teams use Dashboard Technology for data analysis, while it is also known that a higher proportion, 57% of auditing teams, do not use this auditing technology.

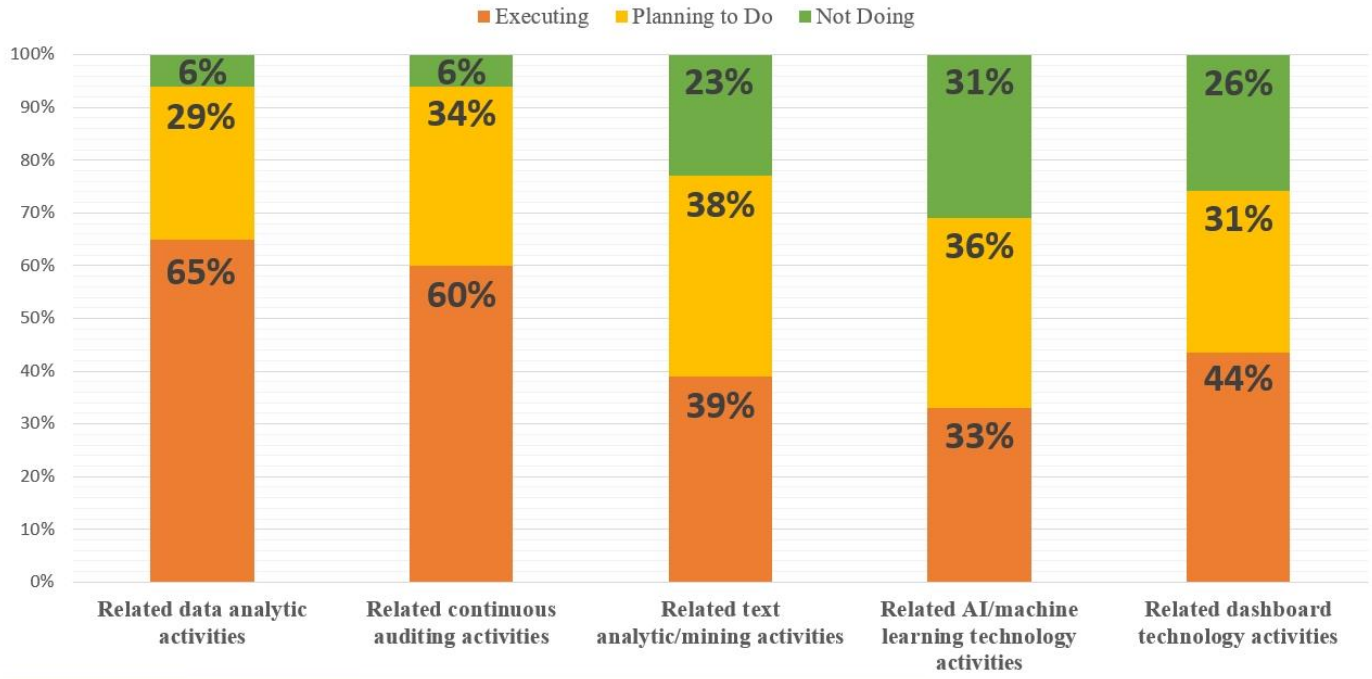
Although artificial intelligence technology has become increasingly prevalent in various industries, its use in the auditing industry remains limited.




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(3) Comprehensive AnalysisAfter analyzing the survey results of various auditing data questionnaires, it was found that direct analysis of relevant data is currently the main usage method. Additionally, Text Analytics/Mining and AI/Machine Learning Technology are the most anticipated technologies to be adopted by auditing teams. However, AI/Machine Learning Technology is also the method that most teams are not yet prepared to use. This indicates that despite the rapid advancement of technology, most auditing teams lack confidence in AI auditing for risk management, fraud detection, and prevention. There is a need for more research and education in new auditing methods to promote and improve auditing standards and achieve the goals of risk management, error prevention, and fraud prevention.

> More research and education in new auditing methods are necessary to improve auditing standards and achieve risk management, error prevention, and fraud prevention goals.



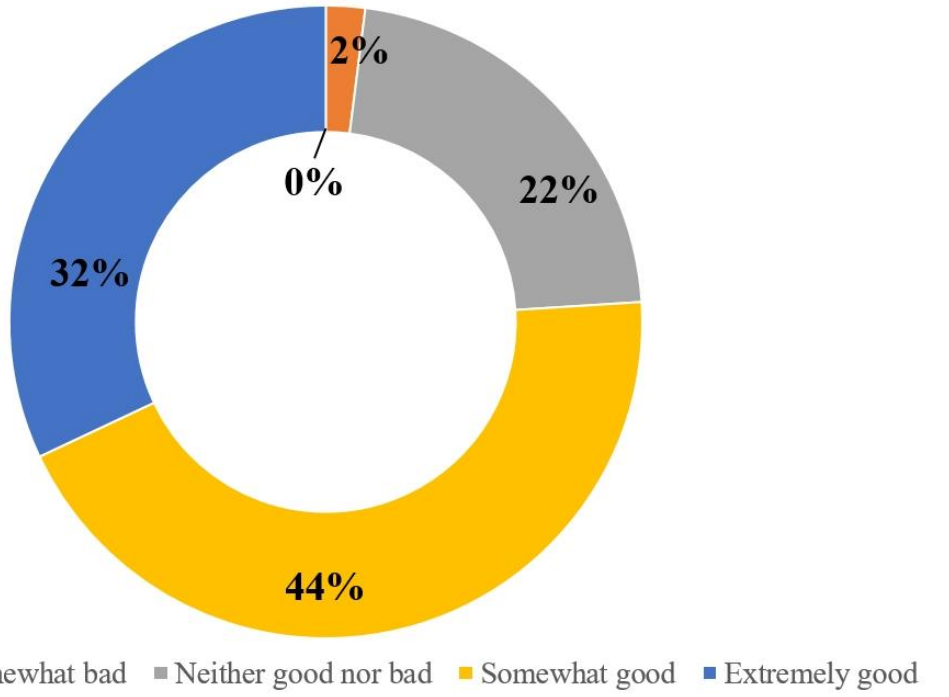

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## 4| FUTURE DEVELOPMENT NEEDS AND PROSPECTS

(1) About audit job security in the AI innovation Era

An analysis of the questionnaire responses revealed that the majority of participants hold a positive attitude towards job security in the auditing field in the era of AI innovation. Specifically, 32.5% of respondents rated their feelings as "extremely good," while 43.6% rated their feelings as "somewhat good," indicating a high level of confidence in job security in this field. A relatively smaller proportion of respondents (22.2%) rated their feelings as "neither good nor bad." This may suggest a lack of understanding or uncertainty about the impact of AI on the auditing field or reflect a more neutral or conflicted attitude towards job security overall.

Most participants hold a positive attitude toward job security in the auditing field in the era of AI innovation.

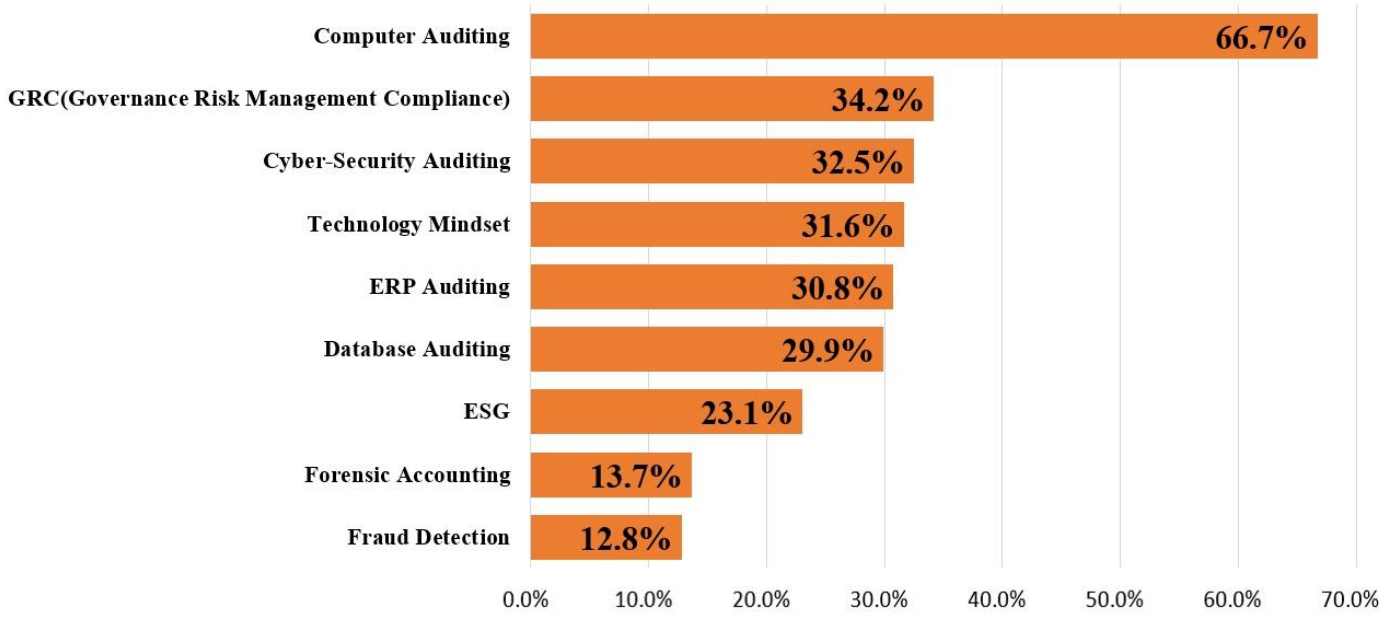



(2) Pursuing training to combat Knowledge gaps

According to the survey participants' outlook on future development, 66.7% of the participants are receiving education and training on Computer Auditing to enhance their knowledge. Additionally, many participants are learning about knowledge related to auditing using computer technology, such as GRC (Governance Risk Management Compliance), Cyber-Security Auditing, and ERP (Enterprise Resource Planning) Auditing. This shows that various types of computer auditing are being accepted and developed by more individuals or enterprises.

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Survey participants receive computer auditing education and training to prepare for future developments.




(3) Pursuing training to combat for Skills gaps

The survey results revealed that 47.9% of respondents are currently focusing on improving their skills in Computer-Assisted Audit Tools (CAATs). Many participants are also learning other computer-assisted auditing skills, such as Machine Learning and Robotic Process Automation (RPA). Notably, a significant number of respondents are investing time in learning Python programming language, which is an AI-related programming language. These findings suggest that there is significant potential for the development of artificial intelligence in future auditing trends.

(4) The Pursuit of Certifications in Computer Auditing, Cybersecurity, or Governance, Risk, and Compliance

The survey results indicate that 65.8% of participants prioritize obtaining the Computer Auditing (Data Analytics) certification for future development. Around 20-25% of participants pursue other auditing-related certifications, including Forensic Accounting, Cybersecurity, AI Python Language, Environmental Social and Governance, and Governance, Risk, and Compliance. This suggests that individuals may choose to pursue certifications based on their specific career goals and the different auditing goals they wish to achieve.

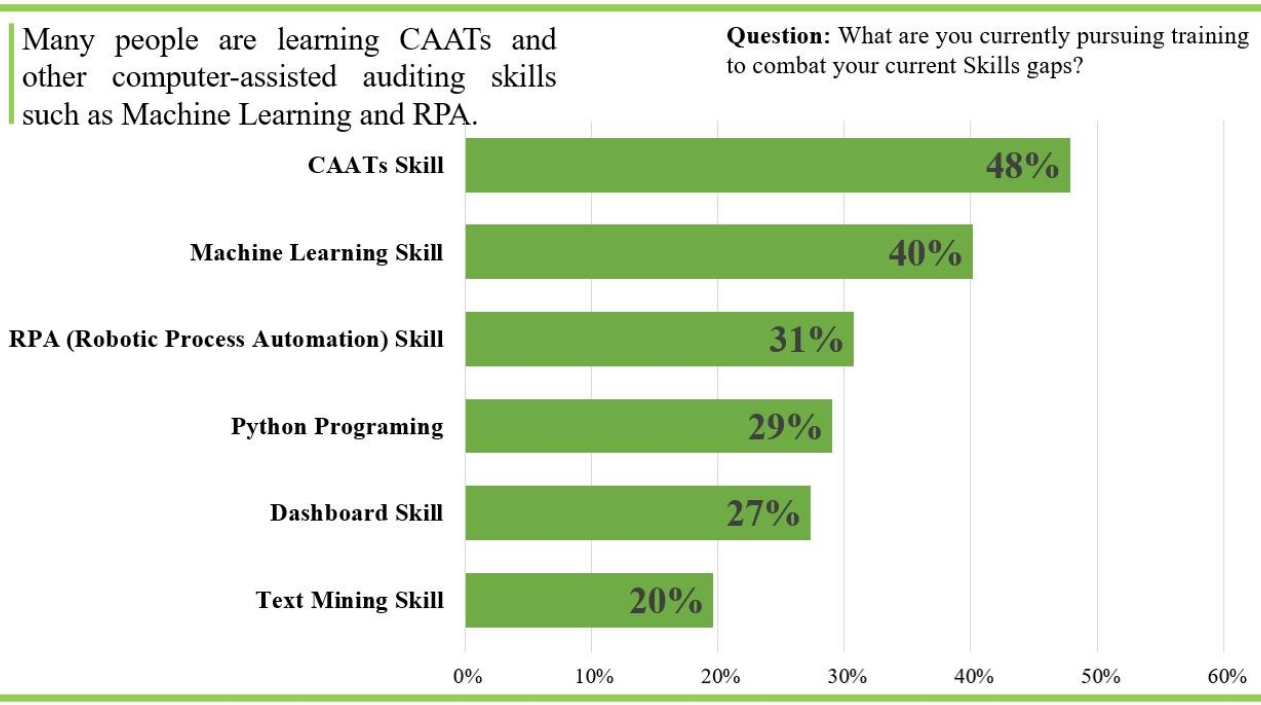
(5) About Others Regarding Auditor Competence Improvement

The suggestions for improving abilities collected in this survey consist of 14 effective recommendations, which can be divided into the following categories: enhancing professional

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expertise, developing sustainable knowledge and skills, expanding the available market database for reference, and promoting communication and collaborative learning.

Many people are learning CAATs and other computer-assisted auditing skills such as Machine Learning and RPA.




## 5 | CONCLUSION

The 2022 Computer Auditing: The Way Forward Survey focused mainly on members of ICAEA, ensuring the credibility of the survey results for future prospects. Among the participants, 25% belonged to the financial industry, with internal auditors representing 37% of all industries. The survey analyzed the current status of computer auditing and found that most participants held ICAEA certificates and used Excel for CAATs. The traditional Related Data Analytic mode was still the primary approach, and few teams were prepared to use AI/machine learning technology. Despite the era of artificial intelligence innovation, the majority of participants held a positive attitude towards job security in the auditing field, with 76.1% expressing confidence. The survey identified Computer Auditing and CAATs as the primary areas for knowledge and skill enhancement, accounting for 66.7% and 47.9%, respectively. Computer Auditing (Data Analytics) dominated the demand for future certification categories, at 65.8%. Although most auditing teams are not yet ready for future technologies such as AI, they are actively seeking knowledge and skills to enter this emerging field.

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# | METHODOLOGY

ICAEA conducted a survey of 117 respondents from 16 countries to understand how auditors can learn artificial intelligence technology for modern internal control processes. The respondents come from various industries and positions to demonstrate diverse and independent perspectives.

This survey used a closed-ended online questionnaire and a convenience non-random sampling method. The sample was taken from ICAEA members or relevant personnel, and the deadline for response was November 5, 2022. The survey aims to explore audit technology from fifteen questions and five perspectives to understand the respondents' views on "the current status, challenges, and future of audit technology and skills." Through the survey and analysis, readers can access public information to gain a deeper understanding of the current status, challenges, and future direction of computer audit development.

# | Notes

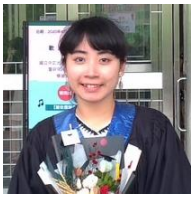
This survey is conducted online and most of the respondents are members and related personnel of ICAEA, with a total of 117 participants. The sampling method is non-random, so the representativeness of the sample needs to be taken into account.
In some of the charts, the total percentage may not add up to 100%, which includes rounding of percentages, multiple choices, and answer options that have not been displayed yet due to their relevance (such as "none").

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# | ABOUT THE SURVEY TEAM




**Chih Yuan Kuo**
HD, Center for E-manufacturing and E-commerce, National Chung Cheng University, Taiwan.
usredmh@gmail.com



**Tzu Yu Liu**
Project assistant, Center for E-manufacturing and E-commerce, National Chung Cheng University, Taiwan.
b15596401@gmail.com



**Pei Jung Wang**
project manager, Center for E-manufacturing and E-commerce, National Chung Cheng University, Taiwan.
usredmh@gmail.com


# | ABOUT ICAEA

ICAEA is registered as a non-profit organization in BC, Canada with Society Incorporation Number S-0060477.


ICAEA Office
21615 49A AVE,
LANGLEY BC V3A 6C4,
CANADA



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