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Adoption of Computer-Assisted Audit Tools and Techniques (CAATTs): An Exploratory Study in Audit Firms

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Abstract

This study focuses on exploring the adoption of Computer-Assisted Audit Tool and Techniques (CAATTs) among audit firms in Malaysia. This study also analyzed the reasons for the adoption of CAATTs by audit firms. This study used an interview method to explore what are the type of CAATTs adopted by the respondents of the audit firm. The findings reveal that there are some audit firms in practice adopted the CAATTs. The reasons are availability of financial resources, partners' expertise and their clients' nature of operation. The adoption of CAATTs is not compulsory by the law or standards however there is an encouragement from the authorities and accounting bodies for the practitioners to adopted CAATTs in their audit works. The findings should provide some inputs to the policy makers and practitioners into the current practice of auditing process and future regulations. The present study opens up opportunities and provide avenues for more in-depth research on the subject of CAATTs.

Keywords: CAATTs, adoption of CAATTs, exploratory study, information system audit

1. INTRODUCTION

In today's business organization, use of information technology has become an inseparable part of the businesses and is one of the success factors of a business organization. Professional accountants are now facing new challenges and risks with the use of information technologies. Information systems are increasingly sophisticated and complex in many business organizations. However the preparation of financial statements by accountants will be easier but the audit works are becoming more complicated and complex consistent with intricate and complex system used by the business organization. For example, use of enterprise resource planning (ERP) also gives a big impact on the company's internal control. ERP changed the way business being transacted and data is collected, processed, disseminated, used and stored (Sutton, 2006) which a computer-assisted auditing tools and techniques (CAATTs) that can assist to read transactions and accounting information stored in the ERP system (Kanellou & Spathis, 2011). So that, auditors need to effectively adopted CAATTs in their audit works to ensure that the evidence has not been altered and correct (Bierstaker, Burnaby, Thibodeau & College, 2001).

Nowadays, the auditing process for business organization that uses fully computerized information system requires external auditor to assess not only the output of the system but also to analyze the software used so that the output of the system will be used for the preparation of the financial statements that can be trusted (Abu-Musa,

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2004; Bierstaker et al., 2001). Auditors should use online audit software as a means of auditing if the audited system is online and collect audit data electronically (Bierstaker et al., 2001). In this computer environment, auditors will no longer to perform audit around the computer but to use audit software to audit through the computer and gain audit efficiency and effectiveness (Davies, 2000; Bierstaker et al., 2001). Auditing in information systems environment involves audit through the information systems which is using data to test the systems. Information systems environment maintains an electronic record about a series of event for business transactions as evidence that the transactions were occurred (Allinson, 2004). The use of computerized systems which there is no paper used as evidence so that the adoption of CAATTs will be more useful and effective (Hardy & Reeve, 1999). Therefore, auditors are expected to have an appropriate tools and techniques to deliver their audit works in auditing many different clients with diverse information systems. The adequacy of controls in information systems and related operations need to be examined by auditors to ensure systems effectiveness (Zhao, Yen & Chang, 2004). International Auditing and Assurance Standards Board (IAASB) issued an International Standard on Auditing 330 (ISA 330) *The Auditor's Responses to Assessed Risks* states that the documentation may not be available due to transactions done by a computer systems. The audit evidence only can be captured by adoption of CAATTs for this situation. Further, ISA 330 states that the adoption of CAATTs can enable to extend testing of data due to the result of risk analysis which may lead to fraud. CAATTs also can be use for selection and sorting of sample or test the whole population. Therefore, this study focuses on a task of exploring the adoption of CAATTs among audit firms in Malaysia.

1.1 Research Questions and Research Objectives

The main research questions in this study is especially focused on the following:

1. What are the type of CAATTs adopted in audit firms?
2. What are the reasons for the adoption of CAATTs in audit firms?

More specifically, this study attempts to achieve the following objectives:

a. To investigate the adoption of CAATTs in audit firms;
b. To identify the reasons for the adoption of CAATTs in audit firms?

1.2 Significance of Study

This study will contributes to the body of knowledge by enriching literature in CAATTs adoption in audit practices. Until now, studies on the adoption of CAATTs in the audit practice in Malaysia is very limited and not yet fully explored, particularly in the form of empirical studies. As a result, many problems associated with this phenomenon has yet unknown. Some earlier studies such as that carried out by Lin and Wang (2011) is focused to the CAATTs software criteria itself such as technical support, cost, system function and data processing. Majdalawieh and Zaghloul (2009) focus on the information systems auditing evolution over time. Nikoloyuk, Marche and McNiven (2005) also using interview method to study the impact of e-commerce on the public sector auditors in Canada, which is focusing on the interest of e-commerce by the public sector auditors. Braun and Davis (2003) is study on the perceptions of the Audit Command Language (ACL) among governmental auditors. Yang and Guan (2004) is focus on the need for auditors to understand well and aware of the pronouncements, standards and guidelines about audits in information technology environments. Ahmi and Kent (2012) focus on the Generalized Audit Software (GAS), one type of CAATTs software.

In practical terms, the results of this study can be used as a guide and benchmark for all those involved in the audit practice in Malaysia. With the benchmark it can be the basis of the parties involved in making decisions related to the audit practice. In addition it will also improve the competition among audit practitioners in improving the quality of their services and raise their image in the eyes of the public. The findings are also expected to clarify the question of the relationship by the use of CAATTs audit practitioners with the reasons for its use. While the policy makers and the government, the results of this study can be used as input and guidance for designing and streamlining any leeway either in laws and regulations or requirements relating to your use of CAATTs in audit practices.

2. LITERATURE REVIEW

The International Federation of Accountants (IFAC) has stated that “information system consists of infrastructure (physical and hardware components), software, people, procedures, and data. Many information systems make extensive use of information technology (IT)” (ISA 315, p. 307, 2009). The rapid growth of technology and the adoption of information systems in audit practices as business result to assist auditors in their roles and responsibilities. One of the components of information systems auditing is the adoption of CAATTs. CAATTs is

the use of information technology and software that helps the auditor to perform tests of controls and verification, data validation and analysis of financial statements and continuous monitoring of the audit work (Lin & Wang, 2011) and (Kanellou & Spathis, 2011). CAATTs is a computer software that allow auditors to use the computer in an information system to gather or assist in gathering and analysis of audit evidence (Zhao et al., 2004). It ranges from a simple audit automation using spreadsheet application to an advanced practice of audit software with databases and business intelligence applications (Braun & Davis, 2003; Rosli, Yeow & Siew, 2013).

CAATTs are always used for data analysis, data acquisition and operational analysis. It can be used in analysis of financial data and error inspections to identify frauds misstatements. Software that can be used include MS Excel and Access, audit command language (ACL), interactive data extraction and analysis (IDEA) and active data (Lin & Wang, 2011). ACL or IDEA, is that the software can read the data in read-only mode, without changing the original data content. These softwares can be used to analyze the financial and operational data and determine the risk items for detailed analysis and tracking, in order for auditors to monitor the high-risk areas.

The increase in usage of computerized information system that is complex provides an opportunity for the auditor to obtain audit evidence more effectively and efficiently, for example, interrogation and use test data files can be tested through the adoption of CAATTs. However, the use of these techniques has its disadvantages as well as the involvement of experts is required, which can be time consuming and expensive, especially in the first year of use. If experts cannot be obtained, the existing staff should be trained to be able to use CAATTs in auditing works, which requires financial and time commitment of the auditors (Ahmi & Kent, 2012). Standards for Information Systems Auditing (*SISA*) 040: Competence issued by ISACA (1997), for example, require information systems auditors to be technically qualified, who have the skills and knowledge necessary to perform the work of auditors. It also ensures that the auditor should maintain technical skills through continuous training and appropriate education.

The adoption of CAATTs in audit procedures has an impact on how auditors conduct audits and record the audit work undertaken. CAATTs is increasing its use as a methodology of audit firm to assist auditors in performing their audit procedures. IFAC (2014) states CAATTs may improve the efficiency and good quality control processes but the risk of audit quality with the adoption of CAATTs are, undue emphasis on compliance with CAATTs software and not judge about the unique features of the audited entity; and new staff spend too much time learning how to use the CAATTs software and forgot to understand the concept of auditing.

In the Malaysian context, the same standard applies since the Malaysian Institute of Accountants (MIA) has determined to adopt the ISA as the basis for approved standards on auditing. Audit procedures performed in computer information technology environment will not change the overall objectives and scope of audit. The auditor is required to consider the adoption of CAATTs that use the computer as a tool to carry out audit work in the implementation of audit procedures. The effectiveness and efficiency of auditing procedures can be improved with the adoption of CAATTs. Effective control testing and substantive procedures on the population and very large sample size can be held also by using CAATTs (MIA, 2003).

MIA clearly states in the International Auditing Practice Statement, page 1, (MIA, 2003), CAATTs may be used in performing various auditing procedures, such as tests of details of transactions and balances, analytical procedures, tests of general controls, sampling of data for audit testing, tests of application controls and reperforming calculations.

Reviews of literature indicated that several studies have attempted to investigate the gap between the desired and the actual level of CAATTs practices among auditors. A study conducted in Singapore for the usage of information system tools and techniques found that external auditors use for limited usage such as for selecting samples to test, substantive test during special investigation and computation to determine materiality and impact on the financial statements (Debreceny, Lee, Neo & Shuling Toh, 2005). Various information system tools and techniques can be used to assist external auditors in delivering their job but most of them only can perform substantive tests (Huang, Yen, Hung, Zhou & Hua, 2009). Therefore, adoption of CAATTs in audit works performed by auditors is still comparatively low due to some reason for example, costs for the adoption of CAATTs is not commensurate with the size of their clients or small number of customers they have (Ahmi & Kent, 2012). This argument raised concern in the perceived value of adoption of CAATTs as computer softwares in helping the auditors do their audit works in information systems environment.

CAATTs may automate previously-manual audit tests, resulting in reduced audit hours for the task and the ability to easily test 100% of the population rather than a sample, greatly increasing the reliability of conclusions based on that test (AICPA, 2001). CAATTs shortens the time required for auditing and achieves cost effectiveness.

Watne and Turney (1990) proposed the following factors of the adoption of CAATTs, reasons for auditors to use computer-assisted auditing (cost, efficiency, audit trail, data processing, etc), time points for the implementation of CAATTs (processing time and the completion of processing, which depends on the complexity of the system), time points of the CAATTs processing cycle (the implementation of CAATTs at the process stage for internal controls and the implementation of CAATTs after obtaining the processed results, which is collected for evidence testing).

The auditing profession in Malaysia can benefit by identifying relevant technologies and conducting self-assessment to learn how CAATTs software can help their members in delivering their audit works and achieve level of quality that can be accepted by their clients and auditing standards.

3. METHODOLOGY

This study use an interview method to gather information, analyse and derive into conclusion. Interview is using conversation which is physically face to face and we understand the context and intention of what auditors tell us (Branthwaite & Patterson, 2011). Interview is involves gathering information in terms of texts, voices and situations happen in the respondent's life. Targeted respondents have experience or doing it during their life so that the information is embedded in them. This approach is to describe, decode, translate and understand the phenomena or a method to understand better as interpretations and meanings of knowledge (Sergi & Hallin, 2012). Researchers choose to see reality from the auditors perspective and bring their whole self into the matter and its allow to experience and acknowledge the auditors emotion and feeling which offers richer understanding on the matter under study. The basis for a theoritical explanation of a phenomena can be understand if studied in sufficient depth and insight, even an observation done in a single case (Hyde, 2000).

Information is gathered from different categories of audit firms, i.e. big-four firms, mid-sized firms and small-sized firms. List of audit firms were compiled and selected from MIA Member Firms Directory. This directory consists of active audit firms in Malaysia and is consistently updated. Therefore, all relevant information about audit firms were gathered from this directory. Information is obtained through structured interviews with 5 audit firms located in Kuala Lumpur and Selangor being selected from the directory which were identified by the research team as meet the criteria and having influence in practicing information systems audit in their firms. One Senior Manager, IS Audit Department from one of the big size of audit firm represents the big four size audit firms group. Two partners from the medium size audit firms are represent medium size audit firms group. Two partners from the small size audit firms is represents small audit firms group.

4. RESULTS

RQ 1: What are the type of CAATTs adopted in audit firms?

Findings from this study provide various results in the CAATTs adopted in selected audit firms in Malaysia depending on the size of the firms. Big firms use Interactive Data Extraction and Analysis (IDEA) or Audit Command Language (ACL) for data analysis purposes. Big firms also use their own developed software to support their staff need in delivering the tasks. As an example, our respondent, one of the big four audit firms use ACL as a tool to do client's data analysis and a software named SCRIPT to check an internal control of SAP systems. SCRIPT is a software which is developed by a software development team based in the firm headquarter, United States of America and distributed to all the firm's operation office around the world.

Medium sized firms use various software in their daily works depending where the partners get their training and experience. One of our respondent is a partner of medium sized firm that has been trained by the big size audit firm which is uses IDEA as the tool to check on data integrity by running a client's data analysis, so that he uses the IDEA as the tool to do the client's data analysis. He uses IDEA software because of training and experience using the system during working with the big four audit firm. He is already exposed with the use of the IDEA software and found that the software is easy and very user friendly. Other respondent from another medium sized audit firm do not use IDEA or ACL software in their audit works. He uses a software called Pro Fx Audit Suite produced by Commerce Clearing House (CCH) Company for audit engagement requirements. This software can produce audit working papers, plans and programmes. This software covers a management of audit works for the firm. The firm still using MS Excel in data analysis and sampling to support their audit works.

Two of our respondents represent a small audit firm group. They do not use any of the above softwares in their audit works except the Microsoft Word for writing reports and Microsoft Excel for assisting them in analyzing accounting data of their clients.

RQ 2: What are the reasons for the adoption of CAATTs in audit firms?

Based on the feedback of our respondents, big audit firms get the support from their headquarters in form of financial and expertise. They can support regional and branch offices by purchasing or developing a software that can be used by all branches and at the same time gets economic of scale due to more users for a software being purchased or developed. They also have their own resources to train their staff to familiarize with and be an expert of the software. There are no problems for the big audit firms in adoption of CAATTs in their audit works.

Results for medium size audit firms are mixed due to different experiences and capabilities of partners and financial resources of each firm. One of our respondent uses IDEA to do an analysis works of the data of his clients due to his experiences using IDEA software during works with one of big audit firm. He is using IDEA software when he starts his own audit firm. His experiences and financial resources are the main reasons for the firm to use the IDEA software in audit works. Other reason is whether the client is using an accounting software or not. If client using an accounting software, the audit firm also need to use the CAATTs software to audit through the computer, otherwise the firms only audit the output from the system if they do not use the CAATTs during the audit sessions. If client do not use any accounting software, the audit firm also do not use the CAATTs software.

Another medium size audit firm do not use IDEA, ACL or other CAATTs software due to lack of experience in using CAATTs and financial strength of the firm. Although clients use an accounting software in their business operation, the firm only checks on system output due to the above reasons.

Result for the small audit firms are about the same, they are not using the CAATTs software due to the main reason is their clients do not use the accounting software and the adoption of CAATTs software is not required in their audit works. If their clients are using an accounting software, there is a small accounting software which is not requires the small audit firms to use CAATTs in their audit works. If they want to use the CAATTs software in assisting them, the cost of training and maintenance do not cover the benefit of implementation. A Microsoft Excel software is enough to do the analysis of data due to the size of database is so small. Small audit firms also do not have enough financial strength to install the CAATTs software. The comparison between costs versus benefits are negative. It means that the costs of implementation of CAATTs is more than the benefits they get. Finally, the firms also do not have enough time to recover the costs until the new version of CAATTs software will be announced.

5. CONCLUSION AND LIMITATIONS

This study aims to achieve two main objectives. First, it attempts to investigate the adoption of CAATTs in audit firms. The findings indicate that various CAATTs software were adopted in audit firms depending on the size of the firms. Big audit firms adopted an established software such as IDEA and ACL while the result for medium size audit firms is mixed. One of medium size audit firm is using an IDEA software but another one is not using such software. Small size audit firms do not use any specific CAATTs software.

Second, this study attempts to identify the reasons for the adoption of CAATTs in audit firms. The findings indicate that big audit firm are able to adopt CAATTs software because they get the support from their headquarter in form of financial resources and expertise. However, reasons for the adoption of CAATTs software among the medium size audit firms are mixed due to different experiences and capabilities of partners and financial resources of each firm. Similarly, findings for the small audit firms show that the main reason they are not using CAATTs software is due to their clients do not use the accounting software and the adoption of CAATTs software is not required. If they want to use CAATTs software, the cost of implementation do not cover the benefit of implementation.

As a conclusion, the adoption of CAATTs software among audit firms may depend on availability of financial resources, partners' expertise and their clients' nature of operation. The findings of this study would initiate discussion, debate and action that will lead to positive changes in the Malaysian auditing profession as it moves forward in today's computerized business environment. It is hoped that the findings will help not only the practitioner but also academicians to focus on the development on necessary information technology skills of accounting graduates. There are two limitations for this study. First, the method of data collection used in this study is limited to survey and interview only and the number of respondents is small. Second, the scope is limited to audit firms only and to a specific regional area. This may not provide the whole truth regarding the adoption of CAATTs in Malaysia and generalization may not be done. It is suggested that future research should study the adoption of CAATTs among different level of companies and also public sector organizations in Malaysia.

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