



State of Information Technology Adoption by Internal Audit Department in Malaysian Public Sector

Aidi Ahmi^{1*}, Siti Zabedah Saidin², Akilah Abdullah³, Ayoib Che Ahmad⁴, Noor Azizi Ismail⁵

¹Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Kedah, Malaysia, ²Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Kedah, Malaysia, ³Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Kedah, Malaysia, ⁴Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Kedah, Malaysia, ⁵Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Kedah, Malaysia. *Email: aidi@uum.edu.my

ABSTRACT

The objective of this paper is to discuss the level of information technology (IT) adoption by Internal Audit Unit (IAU) in Malaysian public sector, the types of the IT applications implemented and the purposes of its implementation. In recent years, internal auditors have begun to realize the important of IT to perform their audit tasks. Specifically, the use of computer assisted auditing tools and techniques can help in terms of audit efficiency and effectiveness. This research employed an online and mail survey method to gather data from 266 head of internal auditors in Malaysian public sector. The results show that the level of IT adoption by IAU in Malaysian public sector is high. However, with regards to the usage of IT specifically in auditing, it is considerably low despite the huge benefits that have been offered by the technology. Due to the nature of the data collection method, the study might reflect the perfection of the respondents which may not translate into actual practice. Further research should consider a field study to examine the real issue regarding the IT implementation in public sector.

Keywords: Information Technology Adoption, Internal Audit Unit, Malaysian Public Sector, Computer Assisted Auditing Tools and Techniques
JEL Classification: M42

1. INTRODUCTION

The National Information Technology (IT) Agenda was formulated in 1996 to help provide an information and communications technology (ICT) framework for orderly develop Malaysia into an information and knowledge-based society by 2020. This agenda has been recently strengthened with the introduction of digital Malaysia program to advance the country towards a developed digital economy. In addition, the 10th Economy Plan (2011-2015) has also given serious attention on the necessary development of infrastructure and environment of ICTs as one of the National Key Economic Areas to ensure that they are in place in enabling the country to move rapidly into the information age. As part of the agenda, the government has to ensure that the implementations of their IT systems are reliable and secure. One of the ways to tackle this issue is through the effective implementation of the government internal audit functions especially through the usage

of IT by the Internal Audit Unit (IAU) in performing their audit work.

The objective of this paper is to discuss the level of IT adoption by IAU in Malaysian public sector, the types of the IT applications implemented and the purposes of its implementation. By understanding how IAU learn to use and adopt IT, this study will (1) fill a knowledge gap in the IT adoption model by providing insights on the IT adoption in public sector, and (2) help providers of training programs to develop IT related training that will accelerate the IAU to learn and adopt IT in auditing.

This paper is organized as follows: Section 2 of this paper covers the background of the internal audit in Malaysian public sector, and IT in auditing. Section 3 presents the methods used in this study, while the Section 4 provides the findings from the survey. Section 5 summarizes the findings, sets out

the limitations of the research and provides implications for future research.

2. INTERNAL AUDITING

2.1. Internal Audit in Malaysian Public Sector

The importance of having the IAU in the public sector is to provide assurance and advisory services objectively to add value and improve an organizations operation. The objective of the IAU is to help the organization achieve its objectives through a systematic, disciplined approach to evaluate and determine the effectiveness of control and governance processes (Perbendaharaan Malaysia, 2004). In addition, Abdul Aziz et al. (2010) stated that the objective of the internal audit is to undertake independent, regular and systematic review of the system of internal control so as to provide reasonable assurance that such a system continues to operate satisfactorily and effectively.

In the public sector organizations, the internal audit function holds high potential for promoting accountability and improving government performance (Ali et al., 2007). In Malaysia, the requirement to established internal audit in the public sector has been documented in Treasury Circular No. 2, 1979 (Perbendaharaan Malaysia, 1979) under the title of the Implementation of Internal Auditing in Federal Government Agencies. This circular was then being replaced in October 2004 with Circular No. 9: Implementation of Internal Auditing in Federal Ministries and Departments and State Governments (Perbendaharaan Malaysia, 2004).

The IAU is responsible for conducting audits of financial management and performance audits. The financial management audit includes examination of financial systems, internal controls and financial records to determine whether expenses, revenues, assets and stores have been handled in accordance with the laws, regulations and instructions. While performance audit includes assessing the activities of an organization to define its goals have been achieved and the resources used in a prudent, efficient and effective (Perbendaharaan Malaysia, 2004).

As stated in Perbendaharaan Malaysia (2004), the terms of reference of the IAU are to:

- a. Study the reliability and effectiveness of financial and internal controls
- b. Review the level of compliance with policies, laws, regulations and directives
- c. Review the organization's activities are managed in a prudent, efficient and effective
- d. Review the organizations assets and interests are safeguarded against loss, fraud and abuse
- e. Give advice or opinion on internal control systems, including ICT
- f. Operate audit function in the statutory bodies under the auspices of the ministry without the supervision of the IAU in accordance with the requirements of General Circular No. 3 of 1998
- g. Report to the chief executive of the audit findings and follow-up on issues raised

- h. Prepare the Annual Plan and Annual Report for the approval of the chief audit executive, and
- i. Present the Audit Report on the Financial Management Committee and Accounts.

According to Abu-Musa (2008) IT increases the accuracy and speed of transaction processing, and can lead to competitive advantages for many organizations in terms of operational efficiency, cost savings and reduction of human errors. Weidenmier and Ramamoorti (2006) stressed that internal audit functions must use appropriate technology to increase their efficiency and effectiveness. Accordingly, the Institute of Internal Auditors (2012) requires internal auditors to understand how IT is used and should be used in an organization, as well as key IT risks, controls, and IT-based audit techniques (Implementation Standard 1210.A3). This shows that IT is important for the auditors especially in the current information age in which almost all of the company's information systems have all been computerized.

While the benefits of IT have been recognized, large amount of money have been invested in information systems by the government to deliver their services to the public. The credibility of those systems however needs to be validated in order to make sure that the outputs are reliable. Thus, internal auditors need to be equipped with the knowledge of IT to audit such systems. Study by Abu-Musa (2008) reveals that internal auditors need to enhance their knowledge and skills of IT for the purpose of planning; directing, supervising and reviewing the work perform.

While the above reference has been incorporated by IAU, the first research question is to what extend that IAU has adopt IT in order to accomplish audit tasks?

2.2. IT in Auditing

With the rapid development of IT and sophisticated accounting systems, it might be impossible for the auditors to audit such system without using any related IT tools. There are phrases that have been used in order to use IT which is "auditing around the computer" and "auditing through the computer" (Braun and Davis, 2003) and auditing with the computer. Auditing around the computer involve extensive testing of the inputs and outputs of the computer application (Hamid, 2012). This normally being implemented when the auditor is satisfied with the control system in place and is able to gather sufficient evidence in this regard (Auditor, 2010).

Auditing through the computer involves various steps taken to evaluate client's software and hardware to determine the reliability of operations that is hard for human eyes to view and also test the operating effectiveness of related computer control (Auditor, 2010). Auditing through the computer can be considered as part of the IT auditing which involves an audit of an organization's computer systems, management, operations and related processes. According to the Auditor-General's (AG) Office Singapore (2009), the objective of IT audit include (1) evaluating the reliability of data from IT systems which have an impact on the financial statements of the organizations, (2) ascertaining the level of compliance with the applicable laws, policies and standards in

relation to IT and (3) checking if there are instances of excess, extravagance, gross inefficiency tantamount to waste in the use and management of IT systems.

Auditing with computer is considered as an extension of auditing through the computer (Hamid, 2012). This involves the use of computer assisted auditing tools and techniques (CAATs) in order to enhance the effectiveness and the efficiency of the audit. Rafeq (2004) defines CAATs as the software tools for auditors to access, analyze and interpret data and to draw an opinion for an audit objective. Based on the guidance note on CAATs produced by The Institute of Chartered Accountants of India (2004) CAATs may be used in performing various auditing procedures, including tests of details of transactions and balances, analytical procedures, tests of general controls, sampling programs to extract data for audit testing, tests of application controls and re-performing calculations.

There are a few types of CAATs which include generalized audit software (GAS), utility software, test data, parallel simulation, integrated test facility and embedded audit modules. Among those, GAS is one of the most important CAATs, which is a class of packaged software that allows auditors to interrogate a variety of databases, application software and other sources and then conduct analyzes and audit routines on the extracted or live data (Debrecey et al., 2005). Example of GAS include audit command language (ACL), Interactive Data Extraction and Analysis and Statistical Package for Social Sciences (SPSS).

CAATs are widely adopted by accounting firms and internal auditing departments (Sun, 2012) due to the wide benefits it offers. CAATs permit auditors to increase productivity, as well as that of the audit function (Zhao et al., 2004). Sun (2012) added that the usage of intelligent data analysis implemented with CAATs could benefit the quality of the audit. Additionally, it has been claimed that the use of CAATs can reduce auditing costs and improve efficiency, which at the same time can also help auditors to focus on high-risk business activities (Braun and Davis, 2003; Debrecey et al., 2005).

While there are different types of IT tools available for auditing, there are also various types of software that has been used in order to administer the audit works such as working paper management, audit planning and reporting, and document storage. This software mainly focuses to facilitate the audit process as well as preparing and presenting the audit report.

Based on the above discussion regarding the various types of IT tools available for internal auditors to perform their audit work, the second research question arise is what are the tools that have been adopted by IAU and to what extent these tools has been used in audit work?

3. METHODS

An online and mail survey method has been used to gather data for this research. There are three levels of government in the Malaysian public sector namely Federal, state and local

Table 1: Organization profile

Category	Frequency (%)
Type of organization	
Ministry	6 (6.1)
Federal department	2 (2)
Federal statutory bodies	41 (41.8)
State secretary's office	2 (2)
State statutory bodies	18 (18.4)
Local authority	29 (29.6)
Total	98 (100)
Age of organization (years)	
<10	53 (54.1)
11-20	24 (24.5)
21-30	8 (8.2)
31-40	11 (11.2)
>40	2 (2.0)
Total	98 (100)
Number of auditors	
<5 auditors	51 (52.0)
5-9 auditors	26 (26.5)
10-20 auditors	10 (10.2)
21-50 auditors	8 (8.2)
50-100 auditors	2 (2.0)
Over 100 auditors	1 (1.0)
Total	98 (100)

government. Federal government consists of ministries, federal government departments and federal statutory bodies. State government level consists of state secretary's offices and state statutory bodies. While local governments include city hall, city councils, town councils and district councils which are governed under the state government. Currently, there are 471 organizations in the Malaysia public sector. However, only 266 organizations have established the IAU and this form the population for this study. The questionnaires were distributed to all head of the IAU. After 100 days, 98 questionnaires were returned which represent a 36.84% of response rate.

For the purpose for this paper, the questionnaire consist of two sections which are organization profile and IT usage. In the IT usage section, questions were asked in the form of Likert scale as well as open ended questions.

4. RESULTS AND DISCUSSIONS

4.1. Organization Profile

From the survey as per Table 1, it is shown that 41.8% of the respondents are from federal statutory body, 29.6% from local authority and 18.4% from state statutory body. The remainder are either from ministries, federal departments and state secretary's offices. Most of the IAU (54.1%) had been established for less than 10 years, 24.5% had been established for 11-20 years and 11.2 percent had been established between 31-40 years. The majority of the IAU that were established <10 years might be due to the requirement of the establishment of IAU by the Treasury Circular No. 9/2004.

4.2. Level of IT Adoption

The respondents have been asked about the level of General IT usage in their internal audit department. Most of the respondents indicate that it is between 41% and 60% of usage. Table 2 shows the level of General IT adoption among the entire respondent.

With regards to the usage of IT in auditing, it indicates that 50 (51%) of respondent are using IT while the remaining respondents use IT mainly for administrating and reporting purposes as show in Table 3.

Among those who are using IT in auditing, they has been asked about the number of years using IT and majority of them (52%) are using it for more than 5 years. This might be due to fact that majority of the respondents are form the federal statutory bodies where their head of IAU are experienced auditors. Only 10% of the respondents have just adopted IT in auditing for less than a year. Table 4 shows the breakdown in term of number of years of using IT in auditing.

4.3. Types of IT Applications Implemented

The respondents have been questioned about the types IT adoption that they have implemented in the IAU. Table 5 presents the results.

In general, IAU has been using computerized applications especially for managing audit works including planning, administrating, reporting and presenting the audit findings. Further analysis from the open ended section found that most of the respondents (81%) used Microsoft Office software such as Microsoft Words, Excel and PowerPoint. Some of them also use Prezi for presentation of audit findings and reports. There are also other applications that have been used by IAU for the purposed of data collection and this was done either by using their own computers or by shared server. Some of the respondents stated that they used emails for communication.

Analysis form the open-ended section also found that there are a few other applications used by respondents such as AG Online

Table 2: Level of General IT adoption

Level of IT adoption	Frequency (%)
No answer	17 (17.3)
0%	3 (3.1)
1-20%	19 (19.4)
21-40%	19 (19.4)
41-60%	24 (24.5)
61-80%	13 (13.3)
81-100%	3 (3.1)
Total	98 (100)

Table 3: IT usage in auditing

IT usage in auditing	Frequency (%)
Not using IT	32 (32.7)
Not sure	16 (16.3)
Use IT in auditing	50 (51.0)
Total	98 (100)

IT: Information technology

Table 4: Number of years using IT

Number of years using IT	Frequency (%)
<1 year	5 (10.0)
1-2 years	7 (14.0)
3-5 years	12 (24.0)
>5 years	26 (52.0)
Total	50 (100)

IT: Information technology

Dashboard 2.0 for monitoring the audit findings. This platform is available online and can track cases as highlighted in the AG's report under the relevant ministry. It is also found that one of the respondents had their in-house developed application known as Electronic Tracking Audit Report that records information about the departments and agencies, audit activities and their internal auditor's record including audit tasks performed and courses attended.

From the descriptive analysis, nearly half of the respondents (41.8%) indicated that they are implementing IT audit. The findings show that among the types of IT audit that have been used include general control of IT, application control, pilot review, IT governance, operating system auditing, database audit, server audit, network audit, data integrity, system security, logical security, application security, data management, change management, performance and capacity, and vendor maintenance.

In addition, a few respondents stated that they have conducted Information Security Management Systems audit based on the MS ISO/IEC 27001:2007, a standard issued by MAMPU. The purpose of this standard is to protect information from a variety of threats in ensuring business continuity, minimize business damage caused by the attacks, information leaks and natural disasters, and maximize return on investment and business opportunities.

Further, it was also found that almost 30% of the respondents indicated that they used CAATTs in auditing, specifically, the used of ACL for data analysis and generating an exception report. If compared to other applications, the usage of CAATTs is considered low. Nevertheless, the finding also indicates that the respondents show interest in using ACL. One of the respondents specifies that their IAU had just started using ACL. Other indicates that their IAU interested to implement ACL, however there are several factors that affects their effort to adopt IT in IAU such as shortage of the audit expert in ACL, changes of

Table 5: Types of IT adoptions implemented by IAU

Types of IT	Frequency (%)
CAATTs	29 (29.6)
IT audits	41 (41.8)
Computerized applications	81 (82.7)
Others	3 (3.1)

IT: Information technology, IAU: Internal Audit Unit, CAATTs: Computer assisted auditing tools and techniques

Table 6: Types of audit software used by IAU

Type of audit software	Frequency (%)
ACL	26 (41.3)
Microsoft access	18 (28.6)
Microsoft excel	7 (11.1)
SPSS	6 (9.5)
Teamate	2 (3.2)
Caseware IDEA	2 (3.2)
TCO stream	1 (1.6)
ESPAK	1 (1.6)
Total	63 (100)

IAU: Internal Audit Unit, ACL: Audit command language, SPSS: Statistical Package for Social Sciences, IDEA: Interactive Data Extraction and Analysis

Table 7: Use of IT in specific area in auditing

Type of audit	Never	Rarely	Sometimes	Often	Always	Mean
Financial management auditing	29	8	12	29	20	3.03
Performance auditing	34	11	18	18	17	2.72
Information systems auditing	51	3	16	7	21	2.43
Operational auditing	45	11	12	16	14	2.42
Financial statement auditing	58	4	8	12	16	2.22
Investment auditing	74	3	4	10	7	1.70
Other	79	3	7	4	5	1.50

IT: Information technology

Table 8: Use of IT in specific task

Audit purpose	Never	Rarely	Sometimes	Often	Always	Mean
To test entire population instead of sample	17	1	6	14	9	2.94
To obtain evidence about control effectiveness	17	1	8	15	6	2.83
To identify journal entries and other adjustment to be tested	19	2	3	15	8	2.81
To sort transactions with specific characteristics to test entire population instead of sample	19	1	6	13	8	2.79
To check accuracy of electronic files	20	3	5	10	9	2.68
To evaluate inventory existence and completeness	20	2	8	9	8	2.64
To select sample transactions from key electronic files	23	1	5	8	10	2.60
To re-perform procedures (i.e., aging of account receivables, etc.)	20	2	9	12	4	2.53
To evaluate fraud risks	21	3	7	12	4	2.47
Others	43	0	1	3	0	1.23

the top management and different interest of top management in implementing IT.

Referring to Table 6, among those who indicate the used of CAATs in auditing, other than ACL, the respondents also using Microsoft Access (28.6%), Microsoft Excel (11.1%) and SPSS (9.5%) as GAS for data analysis.

Apart from CAATs, IT Audits and computerized applications, there are other applications used by the IAU as shown in Table 5, where three of the respondents response to the question. Specifically, each of them mentioned that their IAU are using MyAudit Systems to audit their financial management, using remote application to examine the contents or files in other computer and run SQL statement to analyze the database respectively.

4.4. The Extend of the use of IT

The respondents were also asked to indicate how often they use IT in each of the areas of auditing. The results as shown in Table 7 found that IT has been widely adopted in financial management auditing and performance auditing as compared to other types of auditing.

The respondents also indicated other type of audit that has been performed including forensic auditing, compliance auditing, investigation auditing and follow-up auditing.

4.5. Use of IT in Specific Task

The respondents have been asked about the extent to which IT has been used based on nine functions that has been identified by Janvrin et al., (2009). Table 8 illustrates the results for each function. The mean suggest that respondents assigned higher ratings to test entire population instead of sample and to obtain evidence about control effectiveness.

5. CONCLUSION

Several interesting issues emerge from this survey finding. The level of IT adoption by IAU in Malaysian public sector is high. However, when it comes to the usage specifically in auditing, it is considerably low despite the huge benefits that have been offered by IT. This research provides policymakers with grounded knowledge to formulate effective policies and support system applicable for IAU. It is evident from the study that IT is not widely being adopted by IAU. This research brings into focus the roles of government agencies or any respected bodies must play, in order to make the successful implementation of IT in enhancing the effectiveness and the efficiency of the audit. Due to the nature of data collection of this study, which is survey, the study might reflect the perfection of the respondents which may not translate into actual practice. Further research should consider a field study to examine the real issue regarding the IT implementation in public sector.

6. ACKNOWLEDGMENTS

This research was supported financially by the Ministry of Higher Education Malaysia (FRGS-SO Code: 12929). We thank the reviewers and associate editor for their comments, which improved this manuscript.

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