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INFORMATION TECHNOLOGY GOVERNANCE MECHANISMS AND AUDIT TECHNOLOGY PERFORMANCE IN MALAYSIA

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Abstract

Information Technology (IT) governance is one of the concepts currently emerging along with the development of IT. In fact, many organisations have started implementing IT governance that aims to align their operations with IT effectively. This paper aims to investigate how IT governance mechanisms are related to audit technology performance in Malaysia whereby the focus is on internal auditors from private sector. A quantitative method with a questionnaire instrument was used. The questionnaire items were based on indicators suggested by previous literature. Thirty-hundred and seventy (370) questionnaires were distributed and completed questionnaires were analysed using SPSS version 27. Based on the regression analysis, two independent variables, namely top management support and IT support service are positively and significantly related to audit technology performance. The other two independent variables, IT strategy and IT steering committee are not significantly related to audit technology performance. These findings are relevant to both auditors and organisations. They highlight the importance of top management support and IT support service to the effectiveness of using technology in internal audit. A good IT governance helps organisation to utilise IT in realising its business strategic goals.

Keywords: Audit technology performance, IT governance mechanisms, IT strategy, IT steering committee

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1. Introduction

In 1980s, the market for personal computer expanded when the price of personal computers became more affordable to the public. Since then, Information Technology (IT) and digitalisation have been developing rapidly (Ibrahim et al., 2022). Enterprises realise that IT enhances business management and useful in improving decision making and helps companies to survive in complex and volatile business environment (Chan et al., 2021). COVID-19 pandemic had drastically changed the way business were operated and reported (Pratama, 2021) that forced companies to integrate digital tools into their business operations. Subsequently, IT tools are being integrated into most accounting systems. Hence, auditors must use sophisticated technology for data gathering and analysis and their clients demand them to increase their technology skills (KPMG, 2015). In addition, an effective internal audit function helps directors to improve the quality of corporate governance by taking part in internal control process. By adopting IT system in their audit processes, organisations can provide better controlled results. Overall, IT has substantially affected the auditing profession, both internal and external audit, where most traditional audit functions are dominant.

1.1. Audit technology performance

IT governance is one of the concepts currently emerging along with the development in IT. Organisations start implementing IT governance to ensure effective alignment of their operation with IT. Subsequently, IT has become an integral part to support, sustain and grow the business for better organisational performance. A good IT governance will enhance the usage of technology in performing audit tasks. An organisation with better implementation of IT governance mechanisms can successfully utilise IT in business more effectively compared to an organisation with poor IT governance (Veerankutty et al., 2018). As a result, the internal auditors can improve their audit quality through efficient audit performance. In the era of audit technology, one of the important areas is technology-related auditing. Computer Assisted Audit Tools (CAATs) is one of the preferred audit technologies often suggested by accounting practitioners and regulators (Veerankutty et al., 2018). This audit technology will continue to develop. In recent decades, the development of IT has led to the globalisation of society and markets. In a digital world where the use of IT is constantly increasing, the audit profession is among those affected by digitalisation (Karlsen & Wallberg, 2017). Audit technology performance measures the efficiency of information systems, the effect of the system, and information about user tasks such as user satisfaction and the impact of the system or technology on individual performance.

Audit technology has enabled auditing to have several benefits including: (i) test data, parallel stimulation, integrated testing facilities that directly assess the internal logic of financial applications and software testing to function as expected; (ii) general software for audit designed to access data from client's database, retrieve relevant information, conduct substantive tests to check transaction details and balances, and undertake diagnostic reviews to determine suspicious transactions; (iii) system control audit review files (SCARF) and an embedded audit module fixed in the system to assess transaction flows and determine unusual dealings (Hall, 2015). Having a capable IT Committee as well as the proper support from top management, the organisation will be able to control and address important issues related to IT. This is

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expected to encourage a positive influence among auditors' behaviours about using technology tools for audit functions. Internal auditors have a broader mission and duties than independent auditors, including investigation of operational and financial matters, effectiveness of governance processes, and fraud risk assessment (Moradi & Nia, 2020). When planning for audit work, the auditor should also consider various audit factors such as data transmission errors and intentional destruction of data (Tarek et al., 2017). With the IT availability and digital working methods, the number of papers used is reduced. In addition, by doing audits digitally, thereby paperless, the auditors' working methods are becoming more flexible and efficient, since the information is easier to summarise and organize (Karlsen & Wallberg, 2017).

1.2. Top management support

Support and participation from high-level management are vital to minimise the possibility of risks such as losses of IT investment due to poor IT resources (Nfuka & Rusu, 2013). To improve the performance of IT initiatives, auditors must receive a clear IT planning information and active support from top management. Management support has positively influenced audit technology performance among external auditors in Malaysia (Veerankutty et al., 2018). In Egypt, the successfulness of a project depends more on the top management support than technology issues (Abdelsalam et al., 2010). Jackson (1986) recommends that the involvement of top management facilitates the implementation of organisation control.

Top management support is not only referring to senior managers but also to executive management who support the establishment of IT governance and enforce its sustainable implementation (Buchwald et al., 2014). Senior management plays an important role in all types of evaluations. For project governance, they ensure that governance needs are met and provide the necessary support for the projects (Sirisomboonsuk et al., 2018). Support from top management is an integral factor to form a supportive environment. Initiatives and commitment of top management on IT governance is one of the key success factors for IT implementation. It helps to align the organisation strategies, business operations as well as stakeholders' expectations.

1.3. IT strategy

Management should practice performance measurement system which can provide a set of metrics to obtain an accurate and clear view of IT performance on current and new operations (Hardy, 2003). Based on prior study, effective IT governance component and IT strategy were directly correlated with audit technology performance (Veerankutty et al., 2018). The concept of IT governance is derived from the underlying corporate governance objectives and reflects the alignment of IT strategy with the organisation strategy. Bradley et al. (2012) defines IT governance as the ability of top management to formulate and implement IT strategies through organisational structure and process control, which produces desired behaviours that will ensure that IT initiatives support and extend the organisation's strategies and goals. Raymond et al. (2020) supports a proposition that link a company's IT strategic direction with its IT governance capabilities.

Buchwald et al. (2014) assess the strategic control of the IT governance, which includes the configuration of IT activities and business and the fair disclosures of IT expenses and services and find that

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IT governance leads to effective use of IT assets to deliver the required supply of IT facilities. This promotes greater utilisation of IT or IT efficiency. To strategically employ IT, respondents noted that the oversight board of IT governance emphasises on seamless alignment between business strategy and IT strategy (Ako-Nai & Singh, 2019). The structure and processes required for IT governance are needed to ensure IT goals were only aligned with approved, funded, and prioritised strategic business objectives (Sirisomboonsuk et al., 2018). The management must take necessary action to prevent the business system technology from becoming obsolete with the old system to prevent low quality report resulted from obsolete system design.

1.4. IT steering committee

Organisation trusts the IT steering committee to centralise decision making related to IT. This is to ensure better decision making as IT steering committee is the expert in IT domain. Heindrickson and Carlos (2014) suggest that to have better IT governance, organisation must have an effective IT steering committee which consists of managers and executives from business and IT fields. The IT steering committee is responsible for setting strategic and numerical goals, making investments, approving policies, and setting priorities. IT steering committee has the important goal of strengthening the relationship between the business and the IT department (Bongiorno et al., 2018).

Ferguson et al. (2013) argue that the effectiveness of IT governance is influenced by the level of IT steering committee performance. Karimi et al. (2000) reveal that the association between the IT sophistication level of IT steering committees and management's level of IT sophistication within firms are positively significant in the United States. Such empirical evidence provides merits for the establishment of an IT steering committee, with representations from both IT and business functions, is related with encouraging results. For example, successful integration and coordination of Information System (IS) formulating activities, increased managerial support and funding lead to advanced IS budget and planning practices. However, some other studies such as Ali and Green, (2012) provide inconsistent findings where IT governance mechanisms are not significantly associated to the overall effectiveness of IT governance in Australia.

1.5. IT support service

De Haes and Van Grembergen (2008) examine how effective Belgian financial service providers in implementing IT governance and its impact on business/IT alignment. Their findings show that senior executive support for IT is crucial to achieve an effective IT governance. However, Veerankutty et al. (2018) suggest that IT support service is not one of the contributing factors of audit technology performance. Technical support is something that every business owner need. It covers simple tasks such as setting up accounts for new users and crucial solutions like handling the entire network failure. The common definition of IT support relates to professionals who assist companies in operating technology products including computers, phones, and software.

To enhance the value of IT governance, the involvement of IT staff is also essential. The participation of IT staff in the development of new business strategies, products, and services can be a part of continuous learning organisation, helping them to keep on updating skills and knowledge (Bradley et al., 2012). Unfortunately, most business owners are complacent if their IT orientation are effective where the

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technology professionals simply responding in a timely manner to service issues and requests. IT orientation refers to the degree to which IT staff possess the required skills and attitudes to act business enablers who satisfactorily assist business functions (Buchwald et al., 2014). The involvement of IT staff in the development of new products and services and learning more about the organisation's work areas, along with other staff expanding their IT knowledge base and understanding of the role of IT in the organisation, is likely to lead to better working conditions and a higher level of relationship with auditors (Bradley et al., 2012). Auditors need guidance from the IT professional as they are the one who monitoring and maintaining computer systems and networks.

2. Problem Statement

While an increasing number of internal auditors realises the value and importance of audit analysis (KPMG, 2015; PWC, 2012), regular reviews by AuditNet (2012); EY (2014); KPMG (2015) indicate that audit analysis or audit technology is not fully utilised by most companies. Not every auditor can effectively integrate audit analysis into their job, and therefore use it only on an impromptu basis. Although few papers (EY, 2014; KPMG, 2015) attempt to investigate obstacles to the use of audit technology, several studies have also investigated current levels of use and the factors that explain differences in its use.

Audit technology typically cannot rely on general CAAT as it requires more advanced statistical techniques or data analysis tools (Brown-Liburd et al., 2015). However, most auditors are likely not having sufficient skills and knowledge to use such advanced data analysis tools. Failure to fully understand the technology can lead to misinterpretation of results and methodological misuse. Moreover, audit technology is usually used with huge amounts of data, which can increase the information load and in turn affect the auditor's evaluation process (Schneider et al., 2015). The difficulty in obtaining relevant information from vast amounts of data can prevent auditors from using technology on a regular basis. Understanding the circumstances that influence the use of audit technology can offer insights to audit clients, regulators, and providers of analytical audit software.

Audit expectations gap may be reduced with the use of IT in audit processes especially in risk assessment and sampling. However, the level of technology usage in performing internal audit functions is still low due to difficulties for organisations in outlining the benefits of IT. In advanced IT world, internal auditor without IT usage may face a lot of issues including high commitment to committee, poor reporting, failure to detect fraud risk and so on. Therefore, it is essential for organisation to invest some money in technology and integrate IT tools in their audit functions. In today's IT era, most of the transactions are using e- payment and e- transact where it requires the use of IT. Arena (2013) studied the development of IT among internal auditors in Italian universities and found that auditors are moving forward from financial and compliance audit to operational audit. While Shilla (2014) assessed the usage of IT in Tanzanian organisations and showed that the internal audit department in Tanzanian organisations did not adopt IT and their technology-based audit was not effective.

Auditing profession require compliances to principles and standards. Auditors face many challenges since the audit procedure varies as it depends on the nature of business. Nowadays, more organisations use IT for their day-to-day operations. The IT market is expanding as organisations start to invest more in IT resources. Therefore, it is important to address the audit challenges due to rapid change in IT development

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and usage. Different types of business require different types of audits. Auditing profession is exposed to big challenges if the audit procedures are still conducted in traditional way. However, these challenges might be manageable if the organisation adopts audit-based technology that improving the effectiveness of audit functions (Kong & Edwin, 2021).

Increasing applications of IT tools for business operations call for IT governance. Without proper governance on IT internal control, organisation may be exposed to IT risk or cyber security. Organisations are vulnerable to external threats including virus attacks, phishing, hacking, and unauthorised data access (Ibrahim et al., 2021). Moreover, poor IT control mechanisms can become a barrier for organisation to achieve effective IT governance. However, in most organisations, IT governance is not properly exercised. It is assumed that many directors are still not fully aware and lack knowledge about IT governance. In some cases, the internal auditors themselves are not knowledgeable to conduct technology-based audit tasks. Junior auditor might have been exposed to the current development of IT system during their study. However, senior internal auditors may require extensive training to handle technology-based audit. IT utilisation among internal auditors is still low despite initiatives to improve IT usage. Effective IT governance can help organisations address this issue.

Without effective IT governance, organisation may experience low performance of IT assets where in worst situation, the IT department itself might be forced to close (Veerankutty et al., 2018). IT governance aims to align the IT objectives with organisation priorities, so that it will support its strategic goals. This objective is achieved when the top management and directors understand and have knowledge on IT value. Inadequate IT governance mechanisms will result in bad direction on IT business performance thus leading to IT project failure. Once the top management and directors have adequate knowledge about IT, organisation will recognise the importance of IT in audit function.

Organisation with poor or lack of governance should focus more on improving IT governance. Veerankutty et al. (2018) highlighted that IT governance mechanisms are covered by top IT steering committee, IT strategy, IT support service as well as management support to enhance the stimulation of technological innovation. IT management is positioned at various levels within the organisation: at the strategic level where the board of directors is concerned, at the management level within the upper management layers, and finally at the operational level with business management and operational IT (De Haes & Van Grembergen, 2008). Mustapha and Jin Lai (2017) claimed IT supports the internal auditor's role and judgment by improving the quality of information processed by computer system. This research seeks to examine the relationship between IT governance and audit technology performance among internal auditors in Malaysia.

3. Research Questions

The general research question of this paper is: Do IT governance mechanisms influence audit technology performance? The four independent variables for IT governance mechanisms were top management, IT strategy, IT steering committee and IT support service. These variables were based on previous studies.

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4. Purpose of the Study

The main objective of this study was to investigate the influence of IT governance on audit technology performance in Malaysia where its focus is on internal auditors from private sector.

5. Research Methods

This paper used quantitative research analysis. To examine the auditor's perception of the impact of IT governance on the audit technology performance, questionnaires were distributed to internal auditors who were working in Malaysian private sector. Items of the questionnaires were developed based on previous studies.

This study relied on the general rules recommended by previous studies that the most appropriate sample size can exceed 30 and less than 500 (Mumtaz et al, 2017; Roscoe, 1975) and non-probability sampling is acceptable if it is appropriate for the scope of the study (Mumtaz et al., 2017).

The questionnaire items based on items adopted by several previous researchers. The questionnaires used five Likert scale measures. According to Sekaran and Bougie (2016), questionnaires are easy to operate, fast delivery and fast automatic response. The type of data collection used is primary data from close-ended questionnaire items. Self-administered questionnaires were sent via email or distributed electronically to organisations and respondents via Google Forms to have a broader response from the initial sample size targeted. The questionnaires were distributed to 370 auditors working in Kuala Lumpur and Selangor through email, WhatsApp, Facebook Messenger, and Instagram.

This study employed the Statistical Package for the Social Sciences (SPSS) version 27 to analyse the data. Data collected in this study was gathered, coded, and compiled in Microsoft Excel 365 before being recorded and imported into SPSS software. Any questionnaire with incomplete answer was removed. SPSS analysed and interpreted input data using statistical models appropriate to run the data. Whenever necessary, the data was cleaned, transformed, and modified. The required statistical tests such as normality, validity and reliability were done prior to the regression analysis and indicated no major issues for regression analysis.

6. Findings

The study findings were based on results from the linear regression analysis of the variables. The dependent variable was the audit technology performance, and the independent variables were four IT governance mechanisms: top management support, IT strategy, IT steering committee and IT support service. Table 1 summarises the regression analysis results.

Based on the results, the R-square value for this research model was $r2 = 0.396$, indicating that the four independent variables explained 39.6% of the total variation in the dependent variable. In other words, 39.6% of the variation in the audit technology performance among auditors was explained by the variation in top management support, IT strategy, IT steering committee and IT support service. Meanwhile, the remaining 60.4% of the changes were due to other factors that were not involved in this study. Thus, overall, the model considered to be in low level since $r2 = 0.396$ ($0.3<r2<0.5$).

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Table 1. Results for the linear regression

		Unstandardised Coefficients		Standardised Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	6.605	1.389		4.756	.000**
	Top Management Support	1.87	.062	.255	2.995	.003**
	IT Strategy	-.056	.064	-.090	-.871	.386
	IT Steering Committee	.027	.061	.045	.446	.657
	IT Support Service	.489	.079	.500	6.151	.000**

Note: Dependent Variable: Audit Technology Performance
**. significant at the 0.01 level (2-tailed).
*. significant at the 0.05 level (2-tailed).

The significant relation between top management support and audit technology performance is consistent with findings from Ali (2006) which suggested that good IT governance depends on the involvement of senior management. According to Shao et al. (2016), the most important critical success factor is top management support. Shao et al. (2016) also highlight that top management must act as the innovator and mentor as well as demonstrate transformational leadership to encourage learning and innovation within the organisation and to encourage the use of new and innovative systems in addition to execute tactical action by establishing evaluation mechanisms and offering rewards, typical qualities of transactional leaders. Thus, the increased use of audit technology in performing audit functions can increase the performance of the internal auditors.

On the other hand, the significant relation between IT support service and audit technology is contradicting with a prior study by Veerankutty et al. (2018) which findings suggest no association of IT support service with the technology performance. However, this study finding is supported by Ferguson et al. (2013). IT support service is important to fulfil business needs as it assists planning, sourcing, designing, implementing, operating, supporting, and improving IT services. They are responsible in providing sufficient class and training to the respective users. IT support service needs to have specific soft and hard skills related to the business processes to maximise its effectiveness. It involves a comprehensive structure functioning to reflect on the IT services life cycle. The result for IT support service indicates that the respondents were receiving sufficient support by the team in a timely manner.

7. Conclusion

This study finds that there is a direct and significant association between top management support and the audit technology performance. Many prior studies have also reported similar findings such as Abdollahbeig and Salehi (2020), Ali and Green (2012), Moradi and Nia (2020), Nfuka and Rusu (2013), Veerankutty et al. (2018). Ali and Green (2012) suggest that senior management contributes to a positive significant impact on the effectiveness level of IT governance. Overall, management support is an important component in accepting and implementing organisation's IT outsourcing.

Consistent with previous studies by Karimi et al. (2000), Moradi and Nia (2020), Nfuka and Rusu (2013), and Veerankutty et al. (2018), this study finds that IT steering committee is not a significant factor

to the performance of audit technology. Senior management are interested in IT investment due to the size of the required investment. However, lack of technology training or experience pose a big challenge to the senior executives in evaluating investment proposals.

IT support service is significantly related to the audit technology performance. IT support service holds functions to response and resolve to any problems, inquiries or incidents related with IT quickly. Therefore, organisations should manage their IT related activities effectively with the intention of supporting the use of technology among auditors and the preparation of the proposed IT support service with the aim of increasing auditors' confidence in using audit technology.

Findings from this research would have implications on auditors and organisations. From auditors' side, working with an organisation that has better IT governance would give advantage to them as it could reduce the audit risk through electronic processing and auditing. This in turn will reduce human error in audit tasks and increase the probability of detecting fraud. Auditors would prefer themselves to be attached to a company that provides good IT governance and environment as they can have better understanding about the client's information and increase their risk-identification. This study highlights the importance of IT governance to organisations. A good IT governance can contribute to cost savings and reduce the likelihood of redundancies and risk. This study also provides empirical evidence to the management that IT governance contributes to the effective use of IT in achieving organizational objectives and goals.

The research findings may not be generalisable as they represent specific region and sector in Malaysia. In the future, researchers can use multiple sources of data and larger samples. Comparisons of IT governance effectiveness can be expanded to include regional and sector analysis. In addition, future works could replicate this study by focusing on auditors in certain target populations such as services, SMEs, or manufacturing industry.

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