Integrating Technology in Government Internal Audit: Catalysts and Challenges

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Abstract: In an era marked by digital transformation, various sectors, including government entities, are reevaluating their operational methodologies. This research delves into the pivotal elements influencing the adoption of Information Technology (IT) within the internal audit departments of governmental agencies. The study is grounded in detailed interviews conducted at three distinct government organizations, revealing the intricate dynamics of incentives, barriers, and the prospective benefits associated with IT integration. Preliminary results suggest that a myriad of factors critically shape the strategy toward IT implementation. These include the anticipated enhancements in audit efficiency and effectiveness due to IT adoption, the level of support from senior management, budgetary constraints, and the lack of specialized IT expertise. The findings offer insightful recommendations for government bodies, aiming to aid them in navigating the complexities of IT integration. This study not only highlights the significant role of supportive leadership and resource allocation in facilitating IT adoption but also underscores the need for skill development in this domain. Ultimately, it serves as a strategic guide for government agencies to optimize their auditing processes through effective IT integration.

Keywords: *Internal audit, Information Technology, user perceptions, Organizational culture, IT infrastructure.*

1. Introduction

Information technology (IT) integration has emerged as a crucial component for organizations looking to increase their operational efficiency, effectiveness, and accountability in the modern era of rapid technological advancements. This trend is prominently observed in government agencies across the globe, including Malaysia. The Internal Audit Department (IAD) within these agencies plays a crucial role in maintaining financial integrity, adhering to compliance, and managing risks (Johari, Hadi, & Rashid, 2018). In response to evolving environmental demands, there's a growing realization among government agencies about the necessity of embedding IT into their auditing (Sarwadhamana & Pharmasetiawan, 2018). This strategic integration enables the IAD to leverage technological tools and data analytics to conduct more thorough and real-time audits, fostering a proactive approach to financial governance and risk mitigation. As government agencies continue to navigate the complexities of the modern landscape, embracing IT in auditing practices becomes instrumental for staying abreast of challenges and ensuring sustained organizational resilience (Johari, Hadi, & Rashid, 2018). Globally, government agencies are navigating the complexities of adapting to a technology-driven era. Malaysia, with its expanding IT sector, is actively engaging in this transition. The integration of IT into government operations, particularly internal audits, is viewed as a strategic move to boost operational efficiency and transparency.

While also facilitating immediate monitoring and reporting (Noor, et al., 2022). Therefore, incorporating IT within the Internal Audit Department is increasingly becoming a crucial step for ensuring effective operation and maintaining high standards of accountability in the digital age. This strategic move aims not only to enhance operational efficiency but also to foster transparency, enabling immediate monitoring and reporting mechanisms. According to (Johari, Hadi, & Rashid, 2018), the integration of IT within the Internal Audit Department is increasingly recognized as a crucial step in ensuring the effective operation of government agencies and upholding high standards of accountability in the digital age. This shift reflects a proactive stance, acknowledging the pivotal role of technology in navigating the complexities of contemporary governance while emphasizing the importance of adaptability and responsiveness to technological advancements. The adoption of information technology (IT) within the Internal Audit Department holds paramount importance in contemporary governance, contributing to enhanced operational efficiency, transparency, and accountability. According to (Mohd Noor & Mansor, 2019) integrating IT into government operations, particularly in internal

audits, is a strategic move. IT adoption facilitates immediate monitoring and reporting, empowering auditors to conduct more thorough and real-time assessments.

This aligns with the evolving landscape of technology-driven governance, where reliance on IT tools allows for proactive risk management and compliance assurance (Ronkko, Paananen, & Vakkuri, 2018). Additionally, the potential for IT adoption within the Internal Audit Department to streamline audit procedures and improve the accuracy of financial evaluations highlights its significance. The integration of IT tools enables auditors to analyze large datasets efficiently, identify irregularities promptly, and ensure compliance with regulatory standards (Johari, Hadi, & Rashid, 2018). This not only accelerates audit cycles but also contributes to the overall effectiveness of the audit function. In framing the context of this research, it's essential to highlight the importance of IT adoption in the Internal Audit Department. First and foremost, IT adoption can significantly improve the efficiency of audit processes by automating routine tasks, thereby freeing auditors to concentrate on more strategic areas such as risk assessment and analysis (Al-Hiyari, 2019). IT can enhance the accuracy and dependability of audit outcomes through sophisticated data analytics, minimizing errors, and improving the quality of audit reports (Jaber & Abu Wadi, 2018). Additionally, incorporating IT into audit practices can lead to increased transparency and accountability (Mohd Noor & Mansor, 2019). It allows for immediate access to data, thus enabling auditors to monitor financial transactions and compliance more effectively.

This aspect is particularly crucial in Malaysian government agencies, where public trust and accountability are of utmost importance. Moreover, IT adoption can assist in conforming to international audit standards and regulatory requirements (Mohamed, Ismail, & Abdullah, 2020). With government agencies often under strict scrutiny and reporting mandates, employing IT tools can facilitate compliance with these standards, making the audit process more streamlined and efficient. Despite the numerous benefits IT adoption brings to the Internal Audit Department, its implementation is fraught with challenges (Jaber & Abu Wadi, 2018). Adopting IT, particularly navigating through a complex array of factors, many of which are deeply ingrained, especially in the user's perceptions (Davis, 1989). This study seeks to illuminate these factors, aiding government agencies in Malaysia and other similar settings in making well-informed decisions regarding IT adoption in their internal audit departments. This study also sets out to investigate the factors influencing IT adoption in the Internal Audit Department of Malaysian government agencies. By thoroughly examining the institutional, organizational, and individual facets, the study aims to provide an in-depth understanding of the complexities involved in IT adoption. As government agencies endeavor to align with the ongoing digital revolution across various sectors, this research offers critical insights to inform strategic decision-making, ultimately leading to enhanced efficiency, transparency, and accountability in the operations of Malaysian government agencies.

2. Review of Literature

Technology Acceptance Model (TAM): The 1989 Davis Technology Acceptance Model (TAM) is a key framework for understanding internal audit department IT adoption. TAM can anticipate and explain technology user behavior, revealing why people choose certain technologies (Zhu & Kraemer, 2005). The TAM framework centers on perceived usefulness and perceived ease of use, which strongly impact technology adoption (Davis, 1989). These criteria reveal internal audit staff incentives and concerns about adopting new IT systems (Radner & Rothschild, 1975). Davis defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance." Internal audit auditors believe that adopting IT tools will increase their professional performance (Johari, Hadi, & Rashid, 2018). Auditors must realize that these technologies can improve productivity, accuracy, and risk assessment (Jaber & Abu Wadi, 2018). This component reinforces the idea that users are more likely to adopt technology if they see it as useful for their work. However, perceived ease of use is pivotal within the TAM framework. It represents the degree to which an individual believes that using a particular system would require minimal effort (Radner & Rothschild, 1975).

In internal audits, this element measures auditors' technology comfort. It includes IT system usability, interface simplicity, and implementation assistance (Alkebsi & Aziz, 2017). As smooth and hassle-free integration is desirable, auditors are more inclined to embrace technology when they find it easy to use and are encouraged by its implementation (Noor, et al., 2022). Knight & Burns examine users' perceptions of ongoing technology use. They created the OTAM (Ongoing Technology Acceptance Model) to study people's changing technology

attitudes. They found that technology perceptions can change with experience. Long-term satisfaction may depend on system performance (Shih, 2004), ease of use, and perceived usefulness (Davis, 1989). Technology acceptability is dynamic, and user experiences shape perceptions, according to the study. TAM is essential for understanding internal audit IT adoption. Organizations can better understand auditors' technology adoption decisions by assessing the perceived utility and perceived ease of use (Davis, 1989). This understanding is essential for developing strategies to boost IT integration and improve internal audit processes, which will help the company succeed.

Information Technology Adoption in the Internal Audit Department: In recent years, the adoption of information technology (IT) within government agencies, specifically within the Internal Audit Department, has gained increasing significance (Mohd Noor & Mansor, 2019). The integration of IT tools and systems into the traditional practices of auditing has opened new avenues for enhancing the efficiency, effectiveness, and accuracy of audit processes (Jaber & Abu Wadi, 2018). As government agencies increasingly recognize the potential benefits that IT adoption can bring to their internal auditing functions, understanding the factors that influence this adoption has become a crucial area of research and practice (Eulerich, Wagener, & Wood, 2021). According to (Mohd Noor & Mansor, 2019), internal audit departments play a pivotal role in government agencies by ensuring accountability, compliance, and the efficient allocation of resources. Traditionally, audits have been conducted using manual, paper-based methods, which can be time-consuming and resource-intensive (Eulerich, Wagener, & Wood, 2021). However, the advent of IT has offered a transformative opportunity. The incorporation of IT tools can automate routine tasks, facilitate data analysis, improve the identification of risks, and streamline the overall audit process (Al-Hiyari, 2019). As government agencies strive to enhance their audit capabilities and ensure the effectiveness of their internal audit department, understanding the factors that influence IT adoption becomes imperative (Noor, et al., 2022). These factors encompass a wide array of organizational, individual, and contextual elements, and comprehending their interplay is essential for optimizing IT adoption processes (Al-Hiyari, 2019).

Conceptual Framework for Web-Based Sustainability Reporting: This study has established a comprehensive framework for examining the adoption of information technology within an internal audit department, as illustrated in Figure 1. The framework comprises three key elements: (1) Users' perceptions; (2) Organizational culture; and (3) Information technology infrastructure.

Figure 1: Integrated Framework of IT Adoption in Internal Audit Department
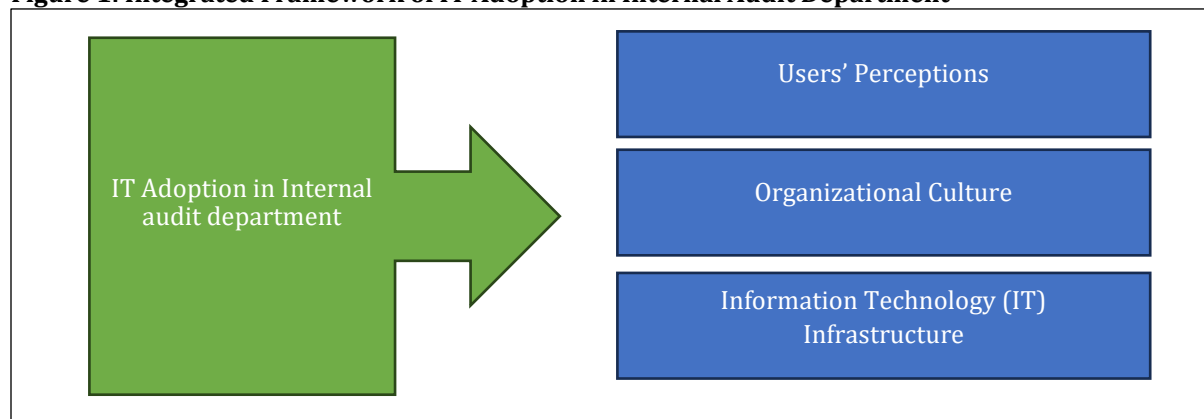
Users' Perceptions of Information Technology Adoption: The integration of technology into the internal audit function has witnessed a transformative shift in recent years (Jaber & Abu Wadi, 2018). Understanding users' perceptions of the adoption of technology is a multifaceted topic that encompasses a wide range of factors. Understanding users' perceptions of technology adoption is a multifaceted subject that encompasses various psychological, social, and cultural factors (Davis, 1989). People's beliefs, attitudes, experiences, and the context in which they find themselves all have an impact on the process by which they choose to adopt or reject a particular technology. Studies that have been done have investigated the complex network of factors that shape users' perceptions of technology use. Users' perceptions, including factors like age, gender, and background, significantly influence their perspectives and feelings regarding technology use (Abou-EL-Sood,

Kotb, & Allam, 2015). One of the fundamental factors influencing users' perceptions of technology adoption is its perceived usefulness. Perceived usefulness, as outlined in the Technology Acceptance Model (TAM) by Davis, is a fundamental factor influencing technology adoption. People are more likely to adopt technology if they believe it enhances their efficiency, productivity, or overall well-being. The perceived utility of technology is closely tied to how well it aligns with individual needs and goals (Serag & Daoud, 2021). At its core, perceived usefulness refers to the degree to which an individual believes that a particular technology will enhance their performance or make their tasks easier to accomplish.

When users perceive a technology as useful, it positively impacts their overall attitude toward using it. They develop a favorable attitude because they anticipate that adopting the technology will lead to positive outcomes (Serag & Daoud, 2021). In other words, if users believe that the technology is beneficial and valuable, they are more inclined to accept it and intend to incorporate it into their routines or tasks (Al-Hiyari, 2019). Perceived ease of use is another critical component in understanding users' perceptions of technology adoption (Davis, 1989). It assesses how user-friendly and usable a technology appears to users. It focuses on users' beliefs about the ease and simplicity of interacting with the technology (Serag & Daoud, 2021). The user interface's complexity, the system's usability, the instructions' clarity, and the time and effort needed to become tech-savvy all have an impact on this perception (Jaber & Abu Wadi, 2018). Essentially, perceived ease of use reflects users' expectations of how easily they can integrate the technology into their daily routines (Al-Hiyari, 2019). When users find the technology intuitive and straightforward, with clear menus and easy navigation, they tend to rate it as highly user-friendly (Jaber & Abu Wadi, 2018). The importance of perceived ease of use lies in its role as a determinant of users' attitudes and intentions toward technology adoption (Shihab, Meilatinova, Hidayanto, & Herkules, 2017). When individuals perceive a technology as easy to use, it positively impacts their overall attitude towards adopting and using it. This positive attitude, in turn, influences their intention to use the technology.

Information Technology (IT) Infrastructure: Information technology (IT) infrastructure serves as the backbone of an organization's technological ecosystem, and its role in influencing IT adoption cannot be overstated. IT infrastructure encompasses a complex web of hardware, software, data centers, networks, and support systems that collectively enable the functioning of an organization's IT environment (Abou-EL-Sood, Kotb, & Allam, 2015). This infrastructure is not merely a passive entity but a dynamic force that exerts profound effects on an organization's ability to adopt and integrate new technologies (Betti & Sarens, 2021). Performance and reliability are equally critical factors (Serag & Daoud, 2021). High-performance infrastructure ensures that new technologies can operate efficiently, meeting user expectations and avoiding bottlenecks that could hinder adoption. Reliability, on the other hand, guarantees uninterrupted service, which is essential for critical applications. According to (Marei, Emer, & Mohd Iskandar, 2019), an organization with a robust IT infrastructure that consistently delivers high performance and reliability is more likely to embrace innovative technologies, knowing that they can be effectively integrated into existing systems without causing disruptions.

Moreover, when adopting new technology, individuals often express significant concerns about security and compliance issues (Al Hadwer, Tavana, Gillis, & Rezania, 2021). IT infrastructure must provide robust security measures to protect sensitive data and systems from a wide array of threats, including cyberattacks and data breaches (Betti & Sarens, 2021). Additionally, it must offer compliance capabilities to ensure adherence to legal and industry-specific regulations, which is particularly relevant in highly regulated sectors (Johari, Hadi, & Rashid, 2018). Organizations must be confident that their IT infrastructure can safeguard their digital assets before they can fully embrace new technologies (Al-Hiyari, 2019). Cost considerations are another critical aspect of adopting IT in (Al Hadwer, Tavana, Gillis, & Rezania, 2021). The affordability of IT infrastructure can significantly influence IT adoption decisions. Organizations must weigh the capital and operational expenses associated with infrastructure upgrades against the potential benefits of adopting new technologies (Tronto & Killingsworth, 2021). An overly expensive infrastructure can deter technology adoption, especially for smaller organizations with limited budgets. Therefore, cost-effectiveness is a key determinant of an organization's willingness to invest in the IT infrastructure required to support innovative technologies.

Organizational Culture: The adoption of technology in the field of internal audit is not just about acquiring and implementing new software or tools; it is also closely connected to the organization's culture and its readiness for change (Johari, Hadi, & Rashid, 2018). Research indicates that organizations with a culture that

values innovation and embraces change are more likely to adopt new technologies successfully. Additionally, the organization's readiness for technology adoption, including its infrastructure, resource allocation, and leadership support, plays a significant role in determining the pace and success of technology implementation (Soomro, Hizam-Hanafiah, Abdullah, Ali, & Jusoh, 2021). Internal audit departments operate within the broader context of their organizations, and the success of technology adoption is pivotal in determining how well these departments can overcome cultural barriers and cultivate a culture of technological innovation (Eulerich, Wagener, & Wood, 2021). This study explores the significant role that an organization's culture and readiness for change play in influencing the adoption of technology within internal audit functions.

Organizational culture encompasses shared values, beliefs, and norms that shape behavior and decision-making within an organization (Betti & Sarens, 2021). A culture that values innovation, embraces change, and encourages experimentation is more likely to facilitate technology adoption in the internal audit function. Conversely, a conservative or risk-averse culture can act as a significant impediment (Abou-EL-Sood, Kotb, & Allam, 2015). Internal auditors often work in organizations with well-established cultures and long-standing practices. They may encounter resistance to change from colleagues who are comfortable with traditional audit methods (Zainol, Ariffin, & Rozali, 2018). Leadership support, resource allocation, and the organization's capacity for adaptation are a few factors that have an impact on this culture (Al Hadwer, Tavana, Gillis, & Rezania, 2021). Leadership plays a pivotal role in driving technology adoption (Sarwadhamana & Pharmasetiawan, 2018). If senior management is committed to the integration of technology, it sends a strong signal to the rest of the organization. Therefore, fostering a culture that emphasizes the benefits of technology adoption and encourages auditors to explore and embrace new tools is paramount (Mohd Noor & Mansor, 2019). By doing so, they can harness the full potential of technology and enhance the efficiency and effectiveness of their audit functions. In the context of technology implementation in organizations, the effective allocation of resources is crucial for achieving success.

The authors highlighted the necessity of allocating sufficient funds for technology adoption (Zhu & Kraemer, 2005). This allocation acts as a concrete indication of an organization's dedication to adopting new technologies as a part of its growth and change strategies. On the other hand, underscores the significance of investing in training and development programs, as they equip employees with the essential skills and knowledge required to harness new technologies effectively (Al-Hiyari, 2019). Additionally, the authors highlight that organizations possessing agile and adaptable structures are better positioned to seamlessly integrate technology into their internal audit processes (Abou-EL-Sood, Kotb, & Allam, 2015). These flexible structures empower organizations to respond promptly and efficiently to evolving technological landscapes, ensuring that technology adoption aligns harmoniously with the organization's overarching objectives and bolsters its innovation capabilities, as emphasized by (Marei, Emer, & Mohd Iskandar, 2019). This literature review succinctly encapsulates the key elements influencing technology adoption in internal audit functions. It emphasizes the importance of user perceptions, IT infrastructure, and organizational culture. In summary, these factors collectively form a comprehensive framework that guides organizations in effectively implementing and integrating new technologies in their internal audit processes.

3. Methodology

This study employs a qualitative research design to investigate the factors influencing the adoption of information technology (IT) within the Internal Audit Department (IAD) of Malaysian government agencies. The case study approach is well-suited to this research, as it allows for an in-depth exploration of a complex phenomenon within its real-life context (Yin, 2018). In this case, the focus is on understanding the intricate dynamics that shape the adoption of IT in internal auditing, considering the contextual factors unique to Malaysian government agencies. The study primarily focuses on internal auditors within Malaysian government agencies as the key study participants possess unique insights into the operational and functional aspects of the Internal Audit Department, including its use of IT tools and technologies. The selection of participants is based on criteria related to years of experience, ensuring that participants have a significant background in internal auditing, improving the depth and quality of the data gathered. In cases where identifying participants may be challenging, a snowball sampling approach is utilized. Snowball sampling, while not a random sampling technique, is particularly suitable when dealing with a hard-to-reach or small population (Berg, 2009).

This approach facilitates access to individuals with relevant experience and expertise in the field. The three participants selected are internal auditors from various Malaysian government agencies, each representing different industries and sectors. To ensure the collection of rich and insightful qualitative data, semi-structured interviews were employed as the primary data collection method (Baskarada, 2014). The choice of interviews is rooted in the notion that internal auditors, as experienced professionals within their field, can provide valuable insights and narratives regarding the adoption of IT tools and technologies. The semi-structured nature of the interviews enables flexibility in probing deeper into participants' experiences, perceptions, and viewpoints while also ensuring that key research questions are addressed. The interviews delve into participants' job details, responsibilities, and accomplishments, with a specific focus on their experiences and perceptions related to the adoption of IT in internal auditing. To maintain consistency and minimize potential biases in the interview process.

Clear instructions and guidelines are provided to participants, ensuring a standardized approach across all interviews. Audio recordings were used during the interviews to accurately capture participants' responses. These recordings serve as a valuable resource for later data analysis. Interviews which typically lasted between 30 to 90 minutes, were conducted in person, audio-recorded with consent, and transcribed verbatim for analysis. This transcription process further enhances data accuracy and facilitates efficient data management. In the subsequent stages of data analysis, a comprehensive approach is adopted. Qualitative data analysis is primarily conducted with the assistance of Computer-Assisted Qualitative Data Analysis Software (CAQDAS), specifically Atlas.ti. The software aids in managing and organizing the vast amount of qualitative data collected from interviews. The qualitative data from interviews, document reviews, and observations are analyzed using thematic analysis, a widely recognized qualitative data analysis method (Braun & Clarke, 2006). This method involves identifying patterns, themes, and categories within the data to develop a comprehensive understanding of the factors influencing IT adoption. Throughout the research process, ethical considerations meticulously addressed by guidance obtained from the relevant ethical review board, such as informed consent being secured from all participants, confidentiality, and participant anonymity, will be meticulously addressed to ensure the highest ethical standards are upheld. Participants were assured of their right to withdraw from the study at any point without any repercussions.

4. Results and Discussion

Demographic and Profile of Respondents: Table 1 overleaf provides the outcomes of a study that involved conducting face-to-face interviews with three respondents situated in the Klang Valley. All three participants held positions as assistant internal auditors within the government sector, representing different industries. These interviews provided valuable insights into the field of internal auditing within this specific geographical context. The participants, designated as R1, R2, and R3, contributed diverse backgrounds and areas of expertise to the research, thereby enriching the study with a comprehensive perspective on their respective roles and responsibilities. Two participants, R1 and R3, have expertise in performance audits, which encompass thorough evaluations of organizational effectiveness, efficiency, and adherence to legal obligations. This process involves assessing different internal processes, systems, and procedures to verify they are in line with set standards and regulations. On the other hand, R2 principally emphasizes financial audits, which involve thorough examinations of financial statements, documents, data, and accounting entries to guarantee precision, openness, and adherence to accounting rules. R1, who has accumulated more than 6 years of experience, and R2, with over 8 years of experience, contribute significant practical expertise and insights to their respective positions. Due to their extensive experience in the sector, they can efficiently handle difficult auditing challenges. In contrast, R3, boasting an excellent 14-year tenure, stands out as an experienced authority in the field of performance audits. Due to their vast expertise, they offer a distinct viewpoint on the historical development of internal auditing processes in the government sector.

Table 1: Demographic and Profile of Respondents

Respondents	Position	Specialization	Job Scope	Years of Experience
R1	Assistant Internal auditor	Performance Audit	Assessment of effectiveness, efficiency, and compliance with legal requirements.	More than 6 years
R2	Assistant Internal auditor	Finance Audit	Reviews a company's financial statements, documents, data, and accounting entries.	More than 8 years
R3	Assistant Internal auditor	Performance Audit	Assessment of effectiveness, efficiency, and compliance with legal requirements.	More than 14 years

Interacting with these experienced experts provides an opportunity to delve into the subtle complexities of government sector internal auditing in Malaysia as this study aims to clarify the difficulties, identify optimal methods, and comprehend the changing dynamics in this crucial field.

Analysis of Factors Influencing its Adoption in Internal Audit Department: Table 2 provides a detailed analysis of factors influencing IT adoption in internal audit departments, based on the perspectives of three key respondents (R1, R2, and R3). It categorizes these factors into three themes: *users' perceptions, organizational culture*, and *IT infrastructure*. The table uses checkmarks to indicate each respondent's agreement and application of these factors. This overview highlights the complexity of IT integration in auditing, emphasizing the importance of aligning *user perceptions, organizational culture*, and *IT infrastructure* for effective technology utilization in audits.

Users' Perceptions: Influencing IT adoption within the internal audit function, one crucial element is users' perceptions. It involves how individuals within the organization perceive the utility and benefits of IT tools in their audit processes. Under the aspect of users' perceptions, several key factors, as shown in Figure 2, are identified. Firstly, enhanced data analysis and reporting signify the recognition that users perceive the value of IT adoption in improving the analysis and reporting of audit data. Secondly, clear documentation highlights the importance of having well-documented processes and procedures, which contribute to smoother IT adoption. Thirdly, facilitation of decision-making indicates that users view it as a tool that aids in making informed decisions. Fourthly, technical support underscores the significance of having reliable assistance and troubleshooting mechanisms. Finally, customization and adaptability reflect the understanding that users appreciate IT systems that can be tailored to meet their specific needs and are adaptable to changing circumstances.

One crucial aspect of adopting IT in the organization is facilitating decision-making. In contemporary auditing, the utilization of IT tools for advanced data analytics, visualization, and reporting is indispensable. These tools facilitate real-time processing and analysis of data, enabling auditors to promptly address emerging issues and risks. This agility enhances the perceived value of IT in internal auditing, as auditors can effectively mitigate risks, streamline processes, and contribute to organizational objectives. Auditors encounter the challenge of sifting through extensive datasets to identify anomalies, trends, and patterns. IT tools equipped with data analytics capabilities assist auditors in efficiently handling this task. *"We have excellent technical support, so we don't feel burdened by the use of IT tools because, typically, we will get help right away if there are any problems."* *(R2)*

Table 2: Analysis of Factors Influencing Adoption Themes by the Respondents

| Factors Influencing the IT adoption		Respondents			Audit IT tools
		R1	R2	R3	
Users' Perceptions	Enhanced Data Analysis and Reporting		√	√	Google tools
	Clear Documentation	√	√	√	
	Facilitation of Decision-Making	√	√	√	
	Technical Support		√		
	Customization and Adaptability		√	√	
Organizational Culture	Innovation Mindset	√	√		Audit Command Language
	Leadership Support	√	√	√	
	Training and Development		√	√	
	Change Orientation		√		
	Cost Consideration	√	√	√	
IT Infrastructure	User Interface Design		√	√	Audit Dashboard System
	Performance and Reliability	√			
	Data Management and Storage		√		
	Security and Compliance Framework		√		

Figure 2: Key Elements of Users' Perceptions Influencing IT Adoption
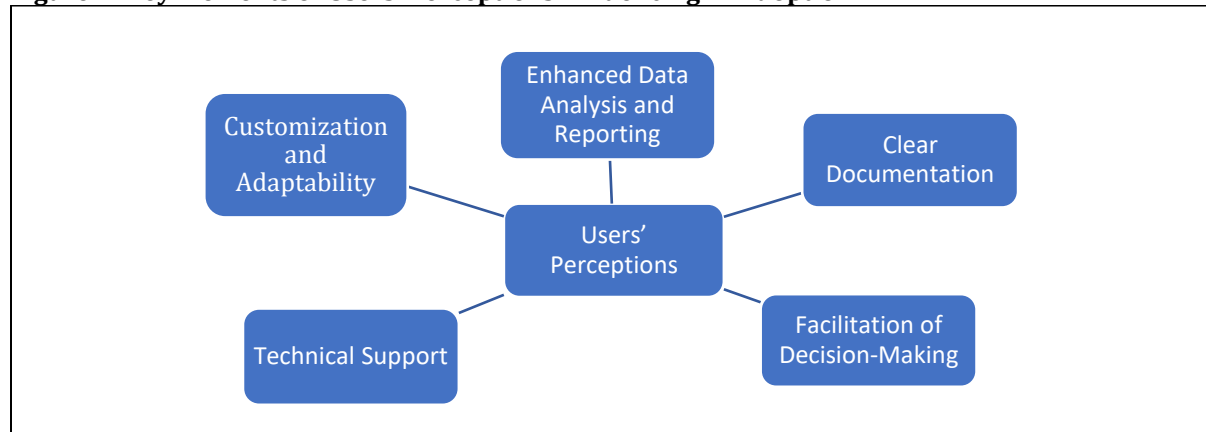
Respondent R2 emphasized the importance of a reliable support system for swiftly resolving technical issues, ensuring uninterrupted work for auditors. This reduces frustration and enhances overall satisfaction with IT solutions. Proactive technical support can also drive ongoing improvements in IT tools by incorporating feedback and insights from auditors, leading to enhanced user-friendliness over time. Auditors' unique requirements and preferences, stemming from the nature of their audits and the industries served, underscore the need for customizable IT systems. Like R3, tools tailored for performance audit work are crucial for R2's specific tasks and functions. Customizable IT tools aligning with audit methodologies, risk assessments, and reporting standards foster a sense of ownership and agency. This customization boosts efficiency and seamless integration with existing audit processes.

Organizational Culture: Organizational culture plays a crucial role in the successful adoption of IT in internal audit functions, as outlined in Figure 3. This culture encompasses an innovation mindset, leadership support, investment in employee training and development, and a willingness to embrace change. These elements collectively foster an environment conducive to IT integration.

Figure 3: Key Elements of Organizational Culture Influencing IT Adoption
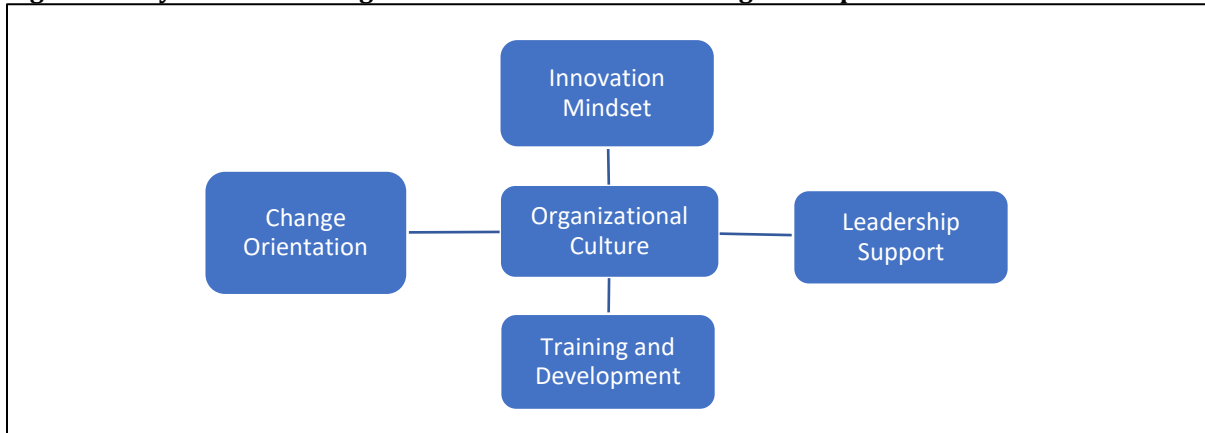
An innovation mindset is essential, as it encourages auditors to explore and embrace new technologies (Betti & Sarens, 2021). The importance of an innovation mindset lies in its ability to break down traditional barriers and facilitate the integration of IT into internal audit practices. As highlighted by R2 during the interview, auditors often prefer manual auditing methods over using IT tools due to resistance to change in mindset. This sentiment was echoed by interviewee R1, who commented: *"When it comes to discussing IT within the internal audit department, for now, we are still conducting internal audits manually. Perhaps promoting the use of IT in our work should not be limited to internal auditors alone but should encompass the entire organization. If only internal auditors use IT while other departments remain manual, it won't be very effective." (R1)* Indeed, empowered auditors who feel encouraged to embrace new technologies tend to discover innovative methods for enhancing audit efficiency and effectiveness. They are less constrained by rigid procedures and more inclined to utilize IT tools that streamline their tasks.

Organizational leadership, on the other hand, was found to significantly influence IT adoption in internal audits. Active support and promotion of IT usage by top management signal to the entire organization that technology adoption is a priority. This support fosters a culture conducive to IT integration. Leadership backing is evident through financial investments in IT infrastructure, vocal endorsement of IT initiatives, and resource allocation for IT-related training and development. When leaders advocate for IT adoption, internal auditors perceive technology as essential to their roles. While all respondents agree on the importance of top management, R1 and R3 received comparatively less encouragement and support. Moreover, Leadership support is also critical. It influences the organization's culture toward IT integration. All respondents agreed on the importance of management's role, but R1 and R3 noted less encouragement from top management.

In contrast, R2 shared a positive experience: *"We have an excellent leader. We are highly encouraged by our top management, which makes us more inclined to use IT tools in internal audits. Each of us receives regular training, so we have adequate knowledge in using our IT tools for auditing." (R2)* This support includes financial investment, endorsement of IT initiatives, and resources for training. Training and development are vital for equipping auditors with the necessary skills to use IT tools effectively (Johari, Hadi, & Rashid, 2018). A culture that values continuous learning ensures auditors are prepared to harness its potential. Lastly, a change-oriented culture is key. It helps auditors view change positively, making them more adaptable to new IT tools and methodologies. R2's experience reflects this, where a receptive attitude towards change facilitated the transition from manual to automated audit processes. In summary, the interplay of these cultural elements shapes the successful adoption of IT in internal audits, as evidenced by the experiences of R1, R2, and R3.

IT Infrastructure: The successful adoption of IT within organizations is influenced by a myriad of factors, each of which plays a pivotal role in shaping the decision-making process. One of the crucial factors is IT Infrastructure. Figure 4 illustrates five key elements that exert significant influence on IT adoption: User Interface Design, Performance and Reliability, Cost Considerations, Data Management and Storage, and Security and Compliance Framework. Understanding the interplay and importance of these factors is essential

for organizations seeking to effectively harness the potential of IT infrastructure, ensuring alignment with their operational needs and strategic goals.

Figure 4: Key Elements of IT Infrastructure Influencing IT Adoption
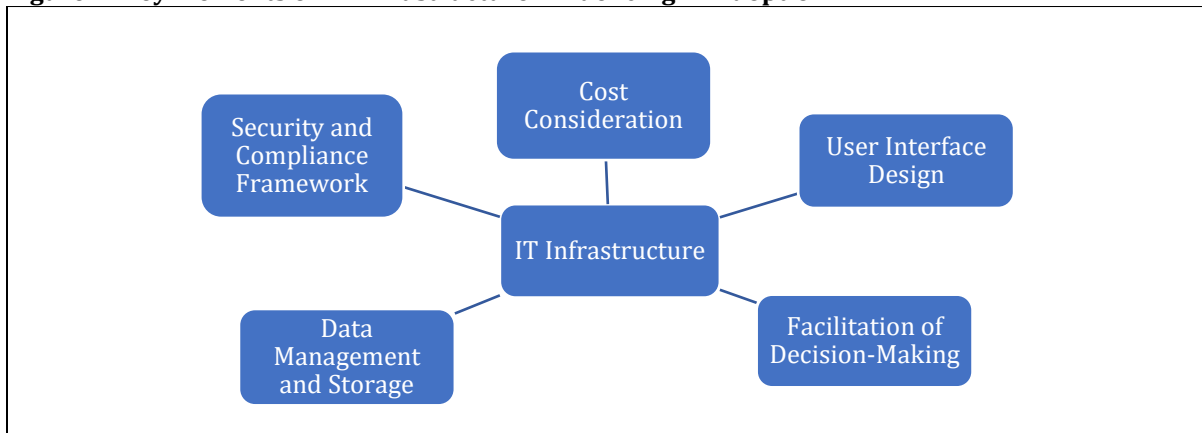
In the realm of IT infrastructure, Figure 4 highlights five key factors integral to IT adoption. User interface design is crucial, emphasizing user-friendly and intuitive interfaces for higher adoption rates. Performance and reliability are equally important, stressing consistent and dependable IT systems to support organizational processes. Cost consideration underscores the need for evaluating the financial aspects of IT adoption to align with strategic objectives. Data management and storage are essential, emphasizing secure data handling to maintain integrity and accessibility. Lastly, the security and compliance framework recognizes robust security measures and regulatory adherence to safeguard IT adoption initiatives. A critical aspect of this adoption process is cost consideration. As one respondent, R1, pointed out: *"Previously, we did utilize IT tools to aid in our internal audit work. However, the cost of these IT tools was quite high. However, we only used them for a few years because the interface and system design were not user-friendly. So, we reverted to conducting our audit work manually." (R1)*

R1 has highlighted several important considerations in the context of technology adoption in internal audits. Firstly, it emphasizes cost-effectiveness, necessitating thorough cost-benefit analyses due to high IT tool costs. Secondly, it stresses the importance of user-friendly interfaces for auditors' effective utilization of technology. User-friendly interfaces are crucial, with organizations urged to consider alternatives if tools fall short. Intuitive designs enhance interactions, reducing learning curves and fostering efficiency. R1 emphasizes the necessity of user-friendly interfaces to facilitate effective IT tool usage. Performance and reliability in IT infrastructure are vital, directly impacting system speed, efficiency, and consistency. Optimized infrastructure ensures swift data access and processing, enhancing productivity. Reliable uptime and rapid response times streamline audit workflows, enabling focus on core tasks. In the realm of internal audit, performance and reliability are crucial due to the need for timely data access and efficient analysis. A well-optimized infrastructure reduces audit cycle times and enhances productivity, enabling auditors to focus on core tasks. *"With the advent of audit technology tools in recent years, it has aided me in acquiring data, especially since the data I require comes from staff across various departments. Typically, without IT tools, I would have to wait patiently for individual responses, which can be quite time-consuming. However, with the current IT tools, I can easily access the data I've received through our system." (R3)*

In the contemporary audit landscape, copious amounts of data necessitate robust IT infrastructure for effective data management. Such infrastructure enables seamless organization, retrieval, and archival of audit data, enhancing audit process efficiency. Access to historical data provides invaluable context for auditors when assessing organizational progress over time. Furthermore, swift data retrieval facilitates trend identification and anomaly detection, enhancing auditors' capacity to pinpoint potential areas of concern. For instance, R2 highlights how rapid data analysis enhances auditors' ability to identify trends and anomalies. Lastly, the Security and Compliance Framework is highlighted as a key factor. R2 emphasized the importance of robust security measures like encryption, which protect sensitive audit data and ensure compliance with regulatory

standards. In the study conducted by Betti & Sarens, (2021), in the digital age of data breaches and cyber threats, IT infrastructure security and access controls are crucial. This aspect of IT infrastructure provides auditors with the confidence to leverage digital tools, knowing that the integrity and confidentiality of sensitive information are maintained. The successful adoption of IT in internal audit functions hinges on a harmonious interplay of these factors. Organizations must ensure that their IT infrastructure aligns with operational needs and strategic goals, considering the insights and experiences of their internal auditors, as exemplified by R1 and R2. These results may enhance our overall comprehension of internal auditing in the government sector, providing advantages for both scholars and professionals in the industry.

5. Conclusion and Recommendations

This study has comprehensively explored the complex landscape surrounding technology adoption in internal audit functions. The application of the Technology Acceptance Model (TAM) has offered a robust framework for comprehending users' perceptions and decision-making regarding technology integration. The research has highlighted the dynamic nature of technology acceptance, emphasizing the influence of ongoing user experiences and system performance. Additionally, the study has emphasized the pivotal importance of organizational culture, where innovation, change orientation, and leadership support are key drivers of successful technology adoption. In the context of IT infrastructure, security, performance, reliability, user-friendly design, and cost considerations have emerged as vital factors that facilitate the adoption process. Clear documentation and robust technical support have also been recognized as crucial elements for a smooth transition to technology-driven internal auditing practices. As we reflect on these findings, it becomes evident that successful technology adoption in internal audit departments requires a comprehensive approach. Organizations should not only focus on the technical aspects of IT implementation but also on cultivating a supportive organizational culture and providing the necessary resources and training for their internal auditors.

This study serves as a valuable resource for internal audit professionals, organizational leaders, and IT professionals, offering insights into the factors that can drive successful technology adoption and enhance the efficiency and effectiveness of internal audit processes. Looking forward, future research in this domain should focus on several avenues. Firstly, the study can be extended to examine the impact of IT adoption on the overall effectiveness and efficiency of the internal audit process, considering quantitative measures and performance indicators. Secondly, investigating the role of training and development programs in enhancing auditors' IT skills and their subsequent impact on technology adoption would provide valuable insights. Additionally, exploring the challenges and barriers faced by organizations in the adoption of IT tools and strategies to overcome them would contribute to a comprehensive understanding of the adoption process. Lastly, a comparative analysis of IT adoption practices across different sectors and industries within Malaysia could reveal sector-specific trends and best practices. These avenues of research can further enrich our understanding of technology adoption in the context of internal auditing and contribute to more effective implementation strategies.

Recommendations

To effectively integrate IT into internal audit functions, organizations should focus on user-friendly IT products with comprehensive documentation and strong technical support. This approach reduces the learning curve for auditors and minimizes disruptions, allowing smoother technology integration. Developing an innovative mindset within the organizational culture is vital, encouraging auditors to embrace new technical solutions and think creatively about audit processes. Senior executive support is also critical for successful IT integration. Leadership should allocate resources, openly support IT initiatives, and invest in training programs targeting IT skills. This ensures auditors have the necessary knowledge and abilities to leverage IT tools effectively. Conducting a thorough cost-benefit analysis is essential for informed decision-making regarding IT implementation, ensuring financial viability aligns with the anticipated benefits. Improving IT infrastructure in security, performance, reliability, data management, and user interface design is crucial. A robust security and compliance framework protects audit data and builds auditor trust, while an optimized infrastructure boosts efficiency and productivity. Organizations need to establish quantitative metrics and performance indicators to measure the tangible impacts of IT adoption. Addressing challenges and obstacles during IT implementation

and devising solutions to overcome these issues is essential. Industry-specific analyses help organizations customize their IT strategies, enhancing the efficiency and effectiveness of internal audit procedures. This approach not only improves audit processes but also fosters a culture of innovation and technological advancement.

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