Investigating the Influence of Technology Adoption: A Qualitative Study on Small and Medium-Sized Audit Firms

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Article Information

Abstract

The adoption of technological advancements in the audit landscape to ease and facilitate the work of financial auditing has brought about a shift in the authenticity and reliability of audit reports. The study aims to examine the impact of technology on present-day external auditing in small and medium-sized audit firms. It also identifies ethical and technological risks arising from overreliance on technology and outline steps for mitigating those risks. Ten semi-structured interviews were conducted on auditors within Klang Valley, Malaysia to elicit their opinions on the research issues. The study found that technological advancements enhance the authenticity of audit firms through the increase involvement and transparency towards clients. Technology also makes it extremely convenient for auditors in terms of collaboration, documentation, and ease of access to large amounts of data or evidence. These conveniences allow for better judgement and decision making for the finalization of an audit report, which is where the human element is crucial. However, a firm must exercise caution and be diligent in its research when implementing new technology. Furthermore, the staff in the audit firm must not lag behind in terms of IT knowledge and ethical behaviors when it comes to the usage of new technology.

INTRODUCTION

The field of auditing has witnessed numerous technological advancements in the modern era. Technologies like artificial intelligence (AI), automation, algorithms, and data analytics systems have found their place in the auditing landscape, revolutionizing the audit process. However, the introduction of such technology may have raised questions among the masses regarding the reliability and authenticity of audit firms, auditors, and their audit reports. As a developing country, Malaysia must advance its audit technology without compromising authenticity and integrity.

In terms of auditing, it is one of, if not the most skilled job, even among auditors, requiring critical thinking skills that AI would not be capable of performing. Aside from that, skills such as work ethics, ethical awareness, and

teamwork are among the most crucial skills for people in the auditing field (Uyar & Gungormus, 2011). However, there is little doubt that technological advancements in the present day are improving at a rate faster than most laymen can even comprehend. Many menial and mundane tasks are slowly being replaced by modern and developing technologies. Accountants nowadays utilize software that has been generalized to perform their day-to-day accounting work as compared to utilizing traditional forms of accounting (Kumar, 2020 as cited in Thottoli, 2021). For instance, a variety of accounting software brands such as SQL are being used by larger companies. These types of software can utilize the user's information input and create complete full sets of financial statements using auto-counting software. Other functionalities of this software include payroll and tax calculations, to name a few. According to Thottoli (2021), accounting software has affected the decisions of shareholders who utilize financial statements for many purposes because the usual accounting processes have differed from standards.

The introduction of new technology into auditing brings the topic of ethics into discussion. It has always been debatable whether technology brings more harm than good. The question of whether new technology will abide by current ethics remains unanswered. The ease with which companies have access to individuals' spending habits, interests, and online behavior could be highly unsettling for many. It calls into question whether companies can maintain their professionalism and whether they are able to safeguard sensitive information of the masses, using it solely for the betterment of the company and the public in a moral and legal way. For example, Hayek et al. (2022) argue that dependency on advanced technology brings about many downsides. They also cite ICAEW (2020), which lists downsides including but not limited to data security issues, fraud, and unemployment. For instance, routine and repetitive work is being replaced by automated systems such as accounting software. Although this hastens efficiency and productivity, the sacrifice would be that low-level accounting employees could find themselves unemployed unless they invest in studying the field in a more specialized manner.

The objectives of the study are twofold. Firstly, it examines the impact of technology on present-day external auditing in the small and medium-sized audit firms. Secondly, it identifies ethical and technological risks arising from overreliance on technology and outline steps for mitigating those risks. The study aims to contribute to the auditing literature in the following ways: firstly, limited studies have been conducted in Malaysia to examine how technology is influencing audit practices in the country. Understanding the intricacies of this research issue is crucial for adapting auditing practices to the rapidly changing technological landscape. Secondly, there is an insufficient exploration of ethical and technological risks stemming from overreliance on technology in auditing practices in Malaysia. Uncovering these risks is essential for developing strategies that can effectively mitigate potential threats to the integrity and security of auditing processes in the present landscape of auditing in the country. Practical recommendations and guidelines are also essential for practitioners and policymakers to address and navigate the challenges posed by the integration of technology in external auditing in Malaysia. All in all, the findings of the study will provide significant contribution in promoting the efficacy, confidence, security, upright and ethical standards of external auditing practices in the digital era.

LITERATURE REVIEW

Auditing Landscape in Malaysia

The field of auditing in Malaysia has undergone significant transformations, dating back to even before the country gained independence. Malaysia's history as a former British colony has shaped the origin of its audit landscape based on English practices. In contemporary times, the field has adapted to global changes and trends while also acknowledging and incorporating influences from its domestic environment.

Historically, the landscape of auditing in Malaysia strongly resembled internationally based accounting and auditing standards. According to Ali et al. (2007), the establishment of the Companies Act 1965 and the Accountants Act 1967 gave rise to a primary pattern of an audit system. This replaced the former system where the operations of corporations were not governed lawfully, and there was no governmental accounting body responsible for the entire nation to represent all qualified accountants, given that the country had recently gained independence. Ali et. al. (2007) further emphasized that these two acts strongly resembled governmental acts from foreign countries. Specifically, the Victoria Companies Act 1961 and the British Companies Act 1948 served as primary references for the Companies Act 1961 (Walton, 1986, as cited in Ali et. al., 2007). Meanwhile, the Accountants Act 1967 held a strong adherence to the Singapore Society of Accountants Ordinance 1963, which also took reference from New Zealand's Society of Accountants Act.

Malaysia's auditing scene has witnessed significant changes due to technological advancements. For instance, the emergence of the Internet in the early 1990s brought about a revolution in the auditing world. The Public Company Accounting Oversight Board [PCAOB] (2004) noted that audit firms in the current era are advised to incorporate

Information Technology (IT) usage and hire IT specialists if possible while Kee et al. (2013) established the fact that large audit firms have started to allocate significant spending to IT to gain and maintain a competitive advantage over other large firms (Banker, Chang, & Kao, 2002). Consequently, the records show that Malaysia is not falling behind when it comes to embracing technological advancements compared to the rest of the world.

Technology in the Field of Accounting

With the forward march of humanity's exploration into technological advancements, businesses around the globe are itching to study the benefits of modernizing and digitalizing their day-to-day operations to cut costs and maximise productivity. The accountancy field holds no exception to this statement. Yet, much of today's technology is prone to abuse and may pose more risks for the uneducated compared to maintaining traditional albeit slower methods of accounting. For instance, how would one verify that the results produced via algorithms are accurate, true and fair? (Berghout et al., 2023) This is among the many questions that supervisors and managers need to ponder prior to their decision making that may very well affect the future of the company that they are employed under. Nevertheless, companies cannot afford to be left behind through the trenches of traditional accounting methods lest they may not be able to capture the attention of younger and forward-thinking shareholders that gossip about the latest technological boom. The following sections will review some of the more famous types of technology that have seen its presence in the world of accounting and auditing.

Blockchain Technology (BT)

Blockchain technology (BT) has been at the forefront of discussion since its first introduction back in 2008. At that time, BT was primarily used to support and streamline cryptocurrency exchanges and transactions, such as Bitcoin. It was known as the "distributed ledger system" that manages the Bitcoin digital currency (Alarcon, 2018). Nowadays, it has been meticulously improved to handle other competing currencies, namely Ripple and Ethereum, etc. In 2009, developer Satoshi Nakamoto released its code that converts bitcoin into a form of currency capable of being traded peer-to-peer without requiring a third party, such as a bank or other authorities, to record, manage, and maintain the transaction in a ledger (ICAEW, 2023). BT ensures that the data received is resistant to alteration because the technology implements encryption methods. At the same time, a consensus mechanism is utilized to ensure the validity of new transactions, with nodes in the P2P network also verifying those transactions before disseminating them to other nodes (Kloch & Little, 2019; Butijn et al., 2020; Yaga et al., 2019, all of them are cited in Doekhi, 2023)

In the field of accounting, BT allows auditors to easily uphold several of the most valued traits of a financial audit, including but not limited to reliability, integrity, efficiency, availability, continuity, and traceability (Doekhi, 2023). The technology ensures integrity through its encryption methods, which are permanently implemented in the network post-validation. Once transactions are validated in the network, they become completely fixed in their current form (Doekhi, 2023), allowing users to access and view these transactions in their purest form. BT enables auditors to efficiently conduct financial audits since there is no need for third-party involvement (Doekhi, 2023). This streamlines the process of transactions and allows a large volume of transactions to be quickly shared within the network. Furthermore, it also allows multiple external auditors working together to access financial records much more efficiently. Transactions are readily available to all nodes due to replication and distribution within the BT network. Doekhi (2023) stated that each user on a blockchain node has access to identical ledgers, and any changes within the ledgers, such as new validated transactions, will be automatically updated for each user. This further supports the idea that multiple cooperating auditors would have their information sharing expedited.

The BT network ensures continuity through its replication function, guaranteeing that any node failure can be salvaged via historical data (Doekhi, 2023). There is no risk of data loss in a BT network because there is a permanent backup of data in other easily accessible nodes. The traceability aspect of BT stems from the technology's name itself. According to Doekhi (2023), the term 'Blockchain' indicates that each block of data is interlinked via a code known as a 'hash pointer.' This trait allows users of BT to easily retrace the steps of any transaction in the network to its origin point, making it almost impossible to hide any transaction.

BT upholds the reliability of transactions by ensuring that the transactions are unable to be altered. Combining the traceability, integrity, and availability aspects of the technology, any transactions inputted into the BT network would be secure and resilient against errors and fraudulent activities through the use of its consensus mechanism system (Doekhi, 2023). This system ensures security by safely logging all legitimate transactions in its database (Biswas, 2023). As a result, auditors need not perform excessively time-consuming investigations to verify transactions, as typically done in traditional auditing methods.

Algorithms

The word 'algorithm' exists in the modern English lexicon. However, Kowalkiewicz (2019) noted that its concept and usage date back to Ancient Greece. Back then, the concept of algorithms was as simple as a set of instructions written in a step-by-step method. In modern-day computer programming, algorithms refer to a collection of predefined rules and directives that a computer is programmed to adhere to whenever it performs computations to address problems or respond to queries (Oosterwijk, Pirkovski, Zielman, 2023).

A simple Google search uses algorithms to produce results based on specific keywords or even the placement of a certain word in a sentence. Oosterwijk, Pirkovski and Zielman (2023) conducted a study into the central government of the Dutch by asking all ministries to report every crucial algorithm that utilizes predictive and prescriptive algorithms. The results showed that a third of the types of algorithms listed by the ministries utilize automated decision-making. Their research also provided insights into the central government's purposes for using algorithms: to streamline and enhance their day-to-day operational management, as well as to optimize resource allocation by leveraging risk forecasts. Based on their study, it is evident that the world of accounting manages to leverage algorithm technology to enhance the quality and speed of external auditors in reporting the outcomes of audits

Algorithms have long been utilized in performing audit procedures to assist in mundane tasks that do not require critical thinking. Through the use of algorithms, auditors can validate data from financial statements and produce reports more efficiently, thereby enhancing the confidence of various stakeholders in auditing. Hoogduin (2020) found that machine learning in financial audits can take the following forms, namely Unsupervised Learning and Supervised Learning

Unsupervised Learning permits algorithms to use machine learning in examining and identifying patterns from data sets (Delua, 2021), and in this case, no human intervention is needed, making the learning 'unsupervised. This helps external auditors reduce their workload and allows them to focus on other tasks that need human supervision and care. Delua (2021) expressed that unsupervised learning is usually tasked with three objectives: Clustering, Association, and Dimensionality Reduction. For financial audits, Hoogduin (2020) used the clustering task to classify journal entries. His coined term "Hierarchical Agglomerative Clustering" is an algorithmic function that categorizes various transaction sources within a company. Payments, sales, purchases, receipts, payrolls, etc., are grouped apart from each other in "clusters" using different colors for identification. An external auditor would easily be able to tell that unusual activity may be present in clusters that have a small amount of different colored dots, allowing them to save time by focusing their investigations on transaction sources that matter.

Supervised Learning, however, is when an algorithm is trained by a human via inputting specific data sets to the algorithm (Gillis, 2023). Gillis (2023) stated that the algorithm is then directed to understand the correlation between specific data inputs and its output variables. The algorithm is then compared to a test data, and the accuracy of the algorithm is judged based on how similar the results of the algorithm are compared to the test data. This particular type of algorithm will be much more specific in its tasks compared to its unsupervised counterpart, making it much more useful in detecting and understanding humanlike behavioral patterns and completing tasks of that manner. Returning to Hoogduin's (2020) study, he gave an example in which a supervised learning algorithm is trained to detect fraudulent transactional data. The algorithm is inputted with substantial volumes of transactional data sets that encompass a mix of fraudulent and legitimate transactions, and is then trained to detect those fraudulent transactions and compared with the known test data. The more accurate the results, the easier it is for the algorithm to detect fraudulent or suspicious transactions. This would make it harder for auditors to miss unusual transactions in their normal course of a financial audit.

Artificial Intelligence Technology (AI)

Artificial intelligence (AI) is a hot topic passed around among tech experts or those of the younger generation interested in finding a way to have their homework done by someone else. In the field of auditing, AI is derived from algorithmic technology. According to Boer et al. (2023), algorithms are predominantly linked to AI technology since the goal of the technology is to develop computer programs capable of carrying out tasks that would typically require a skilled human being to perform. In short, fully realized AI technology is simply algorithmic technology that is so advanced it could act and think like a normal human being. As of now, there are no AI technologies advanced enough to even come close to the behaviors and thoughts of a human being. As such, this section of research will focus on more advanced algorithms stemming from supervised learning. Boer et al. (2023) conducted research on how AI technology could be applied in audits. A form of risk assessment type

research is conducted using a supervised learning algorithm with the ability of 'risk-based selection on applications.'

This algorithm functions by pointing out risky applications via historical information from past manually processed applications. They fed the algorithm a number of task environment types in which the possibility of a computer program encountering them in an audit context is high, along with inputting the reasons as to why these task environments may require an audit. Boer et al. (2023) concluded that they have managed to direct the algorithm to detect risky applications accurately, thereby removing the need for a human to do the same.

Another realistic AI technology that humankind has achieved and can be applied in an audit setting is Natural Language Processing (NLP). Gruetzemacher (2022) explained that NLPs, otherwise known as language models, can perform a variety of tasks ranging from basic analytic functions, including document classification and analyzing the emotional tone in text segments. NLP is also capable of more sophisticated functions such as responding to queries and generating report summaries. Concerning auditing, NLPs would be able to retrieve important information from financial statements, contracts, and similar textual documents to expedite and streamline the process of data analysis (Gopal, 2023). Simply put, NLP can be used to tackle unstructured data in the form of emails, contracts, PDFs, etc. (KPMG, 2023). These forms of documents are generally ambiguous due to human communication behavior and are unable to be processed by the readily available data analytics technology.

In a recent real-world example, AICPA & CIMA (2022) reported the usage of AI technology software by Samantha Bowling, a CPA working in Garbelman Winslow CPAs. She noted that the AI software allows auditors to accurately assess areas that require the most attention via advanced and thorough analysis of the client's available data and financial statements, thereby saving a lot of time for the auditors. The news report also noted that Samantha utilized the risk assessment aspect of the software, enabling her to understand the level of risk associated with the audit. This helps her to appropriately charge her clients based on the level of complexity of the audits.

Overall, while AI technology is still in its infancy, its potential within the audit field cannot be understated. A well-trained AI can significantly reduce the risk of human errors such as omissions and misinputs (Samweez, 2023). The lack of human judgment in AI technology will also enable them to complete tasks objectively, as preconceived notions and personal biases will make it extremely difficult for normal humans to have a purely objective input on their tasks. The auditing field would do well to pay close attention to the development of AI technology in the coming years, as there is no telling how effectively it can shake the foundations of the auditing world.

METHODOLOGY

Type of Research Method

This research adopts a qualitative research approach. Qualitative research aims to answer the how and why of a phenomenon, as opposed to quantitative research, which deals with how much and how many (Tenny, Brannan, & Brannan, 2022). As qualitative research heavily relies on actual phenomena in the real world, techniques such as one-on-one interviews, case studies, and historical research will be employed to draw conclusions on this topic. The subject of technology in the field of auditing has not yet been widely and egregiously discussed, even by laymen standards. Therefore, real-world experiences faced by those employed in the auditing field are extremely valuable. Hence, the qualitative approach is chosen to collect, record, and compile the experiences faced by veteran auditors.

Target Population and Sample Size

The target population is defined as a group of individuals that the researcher aims to research and obtain conclusions from (Barnsbee et al., 2018). To gather data for this research, interviews will be primarily conducted with seasoned auditors who have been involved in the field for over ten years at the very least. The interviews conducted will consist of the same questions to ensure fairness and accuracy of the results. The sample size in research refers to the number of subjects within the chosen target population that is regarded as a proper representative of said target population (Omniconvert, 2023). As a result, ten carefully selected individuals who have all worked in the accounting field are requested to conduct an interview regarding their views related to the topic of this research.

Location of Study

The study will be conducted in the Klang Valley, Malaysia. This is because Klang Valley is home to the capital of Malaysia: Kuala Lumpur. As such, the population of Malaysia is denser here, and it would be easier to locate interviewees from external auditing backgrounds willing to discuss and share their experiences in the audit field. Kuala Lumpur is also home to some of the most active businesses in Malaysia. Hence, auditors living in the area are bound to have been employed as an auditor in a number of active and large businesses, making their shared experiences more valuable for this research.

Research Techniques Employed

Collection of Data

The techniques employed in research refer to the actions taken by the researcher to acquire the data for interpretation. Primarily, these techniques encompass a diverse array of approaches, procedures, and tools used to gather, assess, and analyze data with the objective of addressing research questions or testing hypotheses (Hassan, 2023). As explained above, qualitative research requires insights and real-world events. Interviews serve as the primary source of information for real-world phenomena experienced by other qualified authorities. These interviews will be conducted either face-to-face or via an online chat application, and the information gathered will be recorded and transcribed for data analysis.

Analysis of Data

The obtained transcripts from the interviews will be analyzed alongside literature reviews to explore the validity of the collected data. Examining the correlation between the interviewees' responses and the answers obtained in previous research will assist in reaching an accurate and reliable conclusion for this study. This analysis will also contribute to understanding the reliability of the findings in comparison to actual real-world phenomena. Consequently, it will help in recognizing the importance of obtaining knowledge from historical data and applying it in real-world circumstances.

Thematic analysis will also be used to interpret the data obtained. Thematic analysis is employed by searching for similar patterns among the obtained data to group them together and form themes (Villegas, 2023). This method utilizes the researcher's subjective experience to form opinions on the data. The reason for using thematic analysis for this research is that the level of technology among audit companies is quite even in Malaysia. As a result, most auditors interviewed would have similar knowledge of auditing technology, allowing them to form similar opinions in interviews that can then be used to form themes.

DATA ANALYSIS AND FINDINGS

This section of the paper focuses on interpreting the collected raw data through the stated research techniques, which involve conducting interviews with auditors. The responses from participants will be transcribed, and snippets of their answers will be quoted and used as evidence to investigate the research objectives established beforehand.

Background Information of Participants

Participants	Education	Position	Experience
A	ACCA	Audit Partner	Over 10 years
B	Degree	Audit Partner	Over 10 years
C	CIMA Management Level	Audit Executive	3 years
D	CPA Australia	Audit Partner	17 Years
E	CIMA Stage 3	Assistant Manager	26 Years
F	ACCA	Audit Manager	11 Years
G	CA Graduate Diploma	Audit Partner	12+ Years
H	CA	Co-Owner	2.5 Years
I	CPA	Audit Executive	2 Years
J	FCCA	Audit Manager	26 Years

Table 1: Profile of Participants

Thematic Analysis of Findings

To fulfill the research objectives of this study, thematic data analysis is conducted. The analysis reveals noticeable patterns and similar ideas shared by the participants in the interviews. The following analysis primarily demonstrates the similarity of ideas and statements among participants, forming patterns, a crucial factor in thematic analysis.

Research Objective 1: the impact of technology on present-day external auditing in small and medium-sized firms.

(i)   Enhancing Collaboration, Efficiency, and Quality

There has been a growing consensus that the usage of audit technology or at the very least, computerized audits, has led to a significant reduction in the need for travelling and an increase in the ability for collaboration. Traditionally, auditors will have to travel to meet up with clients and vice versa, and if auditors are working together for one client, they will also have to travel and meet up together to perform collaborative work. The online nature of computerized auditing and audit software technology allows for auditors to not only access audit evidence from anywhere they are as long as they have a CPU and an internet connection, but their clients are also able to provide more audit evidence through the computer or an audit software. This allows the auditors to spend more real time actually reviewing audit evidence and identifying anomalies among data samples, allowing for higher-quality audits. Additionally, the ease of collaboration from using technology has allowed for teamwork to improve, resulting in authentic peer-reviewed reports. Participant B noted that:

"Let us say, if tech such as collaboration apps don't exist, then we won't have access to staff from other countries such as the UK unless we fly to them. I am currently sitting in Seremban right now and I can congregate with those that are in Singapore, US etc. Even if we do not refer to overseas examples, I can still have meetings with someone from Johor or Penang side from the same office. The communication barrier is lowered, and it is easy for us to deal with multinational clients."

Participant D also asserts that:

"Workwise, collaboration is so much easier. Last time, when I want to view my colleague's work, I have to print out their work or go to see them. With technology, collaboration is much more seamless. Last time, to meet up with partners, you have to make sure both of you are physically available. Now, with a virtual call, you can not only meet but can also share documents."

Participant F shares the same view by stating:

"There are clients that do not keep hardcopy anymore, only softcopy. When we audit, we can give them a link to Google drive or Dropbox. Once we select a sample, the client may upload their documents into Google Drive or Dropbox and we can view from that. We save time and travelling costs. In Zoom and Microsoft Teams, we do not have to visit our clients to meet them."

This is further supported by Participant G which expresses that:

"The cloud self-developed program that we have, that is now being developed to extend to the client so they can load their own audit evidence into the cloud for us. We do not have to keep chasing them. We can just tell them to access the cloud and load it themselves. We do not even need to be on site with the client so that has helped with the efficiency of the client."

The fact that software and computerized audit systems allows for seamless collaborations from not only auditor and their colleagues, but also auditor and clients, will give the auditors access to data that is of higher quality, reliable and also accurate which will in turn help the auditors to churn out reports of higher authenticity and reliability.

(ii)   Elimination of repetitive tasks and reduction of human errors

From the interviews, some of the participants also noted that audit technology has allowed for mundane and routine tasks to be automated. These tasks include margin analysis, ratio analysis and sampling. In traditional forms of auditing, the auditors themselves have to perform these analyses and sampling, leading to errors and mistakes. With technology, they agreed that with the time and energy saved from skipping these tasks allowed auditors to use the energy and mental capacity that would have otherwise been used for those tasks to focus on the next step from reviewing the results produced by the automated counting system from the software. Auditors, who have obtained numerous professional qualifications, would be more suited in making professional judgement calls from analyzed data via automation. This viewpoint is supported by participant G, who states that:

"There's always going to be professional judgement. A computer can get us ninety percent of the way there, but then there's going to be a portion where we need to start focusing on. People always say that auditors, accountants, and the like are going to go extinct and replaced. In reality, there's always going to be that judgement piece. That's where I think modern technology cannot replicate. They can pick things up but there's still humans that need to analyze it. Otherwise, you're going to get a lot of false positives and false negatives. It really relies on the individuals to investigate. That is where I can see our job heading. Less routine and mundane tasks and more investigating unusual items and focusing on the risk."

Participant E supports the fact that automation helps reduce errors by stating that:

"Traditionally, we need to link the data ourselves for every page and worksheet. With the software, there is no need for formula linking and audit adjustment. The system will automatically link the data for us. The system will help us to reduce the errors of the formula linking. My staff can also just key in the double entry and this software will auto link to the respective schedule, rather than going to the schedule to link manually. Sometimes they will link wrongly which will lead to the balance sheet not being tallied."

Participant C also alluded to this fact by stating that:

"In terms of software, if we use manual methods such as excel, there is a possibility it may not tally and mess up the calculation. With the software, this will not happen as the calculations are accurate."

Participant B also said that:

"We do margin analysis and ratio analysis. When we do the analyses, we don't have to manually count in the software. The software will auto-count for us. From there we can save time."

(iii)   Sampling method using the audit software.

If there is one key change that is observable with the switch from traditional methods of auditing and modern, software-supported or computerized auditing, it would be the method in which audit sampling is conducted. Participant E gave a bit of insight as to how sampling works in an audit software:

"We use audit programs and an audit software called AXP. Our historical data will be in the software. When we start the audit, we will key in the necessary information within the system and the system will advise on the sampling method and the samples that we choose. The report will be automatically generated after we completed our audit program and searching."

The participants shared that, traditionally, sampling methods are conducted by obtaining a small sample size of an entire population of journal entries and then their analysis would be conducted amongst that small sample size. Their results would be representative of the entire population, which would lead to small anomalies and outliers being overlooked. With software-based auditing, the sample sized can be increased to the entire population of journal entries, meaning every single journal and ledger would be audited in the software. This leaves zero room for outliers and tiny anomalies to be missed. The reliability and authenticity of the audit reports produced from such a large increase in data accuracy cannot be understated. Participant G pointed this out quite comprehensively:

"The new data analysis ways have really revolutionised how we performed our audits. Back in the day, as I said, you take twenty-five and use that as a representative of the population, but the population is like thousands. Now with access to all data, you can get the system to instantly analyse anything that does not follow the routine process like unusual journal entries being booked.

For example, there is a hundred percent of journal entries and ninety-nine point five percent of them follow the routine process. The remaining does not so our audits now focus on that zero point five percent because that suggests where the error could occur. Because someone has essentially bypassed routine audit works. Instead of relying on a representative sample, you can use the entire population now."

Participant F shared what it is like to perform sampling without using a dedicated audit software. Their experience with sampling is through Microsoft Excel and Google Calculator:

"We can get their (client's) database in their software and export them to Excel. In Excel, we can filter and highlight the required data and from this data we can find the source of document. This is sampling method. We can also use random sampling using google calculator. We can put a random figure in Google and see what sample we can pick up."

Their experience showed that sampling methods have evolved over the years. From manual methods such as cherry-picked physical journals as samples (which a normal auditor would only be able to go through a few tens of), to exporting databases into Excel and using Google calculators (which increases the sample size more than physical traditional methods), and finally to participant G's software which is able to use the entire population to run audit testing on. This is observable physical evidence on how auditing has become more accurate, reliable and authentic over the years.

(iv)   Enhancing communication and fostering client relationships

With the advent of cloud technology and software offering client-side usage, auditors can involve their clients to streamline audit processes. Client-sided involvement in the audit process allows clients not only to closely monitor their auditor's work but also to learn and understand the audit process. This empowers clients to gauge the quality, reliability, and authenticity of their auditor's reports.

Participant G, using technology with client-sided access, shared his perspective:

"Clients can access the portal with a different module for them to upload their evidence. The module is not the same as our end where we do the audits. The clients can't see how we do our audits, the review, and the sign-offs."

Participant F also contributed by mentioning a system involving banks:

"We need to get the client's signature and post it manually to the bank, and the bank needs to post back to us. This may take months for the bank to reply. Now we have a platform, formed by authority. We just need to email the format to the client for their signature and email it to us, where we upload it to the system. The bank will reply within 2 weeks. We save a lot of time using this system called E-Confirm. Without it, sometimes we close our file, and we have not gotten a reply. E-Confirm has three parties: bank, auditor, and client. The bank has no authority to go into the platform. Only the auditor and client can do that. The bank can only authorize the documents and scan them back to us."

Auditing is a business, and, as such, marketing and fostering client relationships are crucial in day-to-day operations. Technology has allowed audit firms to improve relationships and increase trust and authenticity with clients. Some participants mentioned scenarios in which audit systems cater to clients' needs and requests. Satisfied clients foster recognition, which is important for any business.

Participant E provided an example of fulfilling a client's request for data:

"We can easily extract client transactions and run reports in the software. Sometimes, clients will ask us to provide them with the opening balance so that they can tally it with the next accounting period. We can extract it straight away from the system instead of doing it ourselves for them."

Participant H expressed that their software could tailor reports to the requirements of their clients:

"Depending on the requirements of the client. For example, some might want more insider information on their business, so we use data analytics to generate reports relevant to their requirements. Otherwise, we just give them the audit report, which is the traditional way of presenting reports to the client. The software tailors to the requirements of the client. If they want a more robust and systematic way of reporting, we can do that as well. It is much faster and reduces cost to follow client requirements."

Research Objective 2: Ethical and technological risks arising from overreliance on technology and outline steps for mitigating those risks.

The second research objective investigates the technological and ethical problems faced by audit firms and the strategies employed by those firms to mitigate them. Participant A shared their views on how their organization manages their risks:

"We must first identify what kind of risk we are facing. We are usually facing these back up problems. Probably the staff will not backup the information in the system and they back it up in their own google drive. Also, we need to make sure once their work is done, a copy will be made of their work will be sent to their supervisor to ensure that their work follows SOP. Staff training and communication is important."

Participant B shared that it is important to also obtain signed promises of orderly conduct enforceable by the organisation:

"Different users have different methods of using the software. For example, I can say that this meeting is not recorded, but I can record without you knowing. You can at least sign some Non-Disclosure Agreement (NDA) and have the staff read the firm's manual when it comes to using audit technology since most firms would have a manual and firm policy. We cannot read human minds so the only thing we can do is manage them using evidence that they will behave appropriately and compliant with firm policies and procedures."

Participant C mentioned that it is crucial to have sufficient oversight on their employees that are using the company's audit software or similar technology.

"Checking employee work. The supervisor or manager needs to review the reports before sending it to clients. Also, guidelines for employees to follow, making sure that they understand what they are doing."

Participant E also shared the importance of clear guidelines for their employees:

"The company needs to create clear guidelines on how to use the software and not misuse them. Time by time, we need to keep track and monitor their work to ensure their work is done according to procedure and standards."

Which is also parroted by participant I, along with going above and beyond to convey transparency to their clients:

"We have implemented clear guidelines and policy to prevent staff from misusing the technology. We also ensure clients know exactly how our audit processes are conducted so that the work can be carried out transparently."

Following that, participant F's organisation finds it crucial to have a code of ethics as a reference for their auditors.

"We need to have code of ethics which we copy from authorities. The staff can review and see from server, or we can conduct training for them. We can also "brainwash" them, telling them they can't do this and that and ask them what the purposes of the tests are. Especially those that are fresh graduates."

Participant G also described the importance of staff quality and training:

"Education, training, tone from the top. It depends on the staff and hires instead of the technology itself."

These answers prove that the organisation's staff who are in charge of using the audit technology on a daily basis play a crucial role in mitigating the ethical and technological risks associated with the usage of technology. The advancement of technology is propelled in order to assist and make human lives easier, but it is the intention of the users that will determine whether the results of said technology are harmful or helpful. As such, the participants emphasized the importance of how their organisations would manage, train and monitor their staff.

DISCUSSION AND CONCLUSION

To sum up, technological advancements adopted within audit firms have several benefits and detriments that come as a package. First, the participants mentioned how technology has improved the accuracy of audit testing methods, such as the sampling method, which evolved from using a small percentage of the population of journal entries traditionally into using the entire population of journal entries. This ensures no outliers and tiny mistakes are missed. Next, audit technology has allowed auditors to spend more real time on their audit work by mitigating travel requirements. This allows auditors to have more time and energy on their work, thereby reducing their mistakes and errors, alongside travel cost reductions. Moreover, the enhanced possibility in collaboration for not only auditor to auditor, but also auditor to client, allows for a more transparent service and an increase of trust towards the audit firms. Furthermore, audit technology is capable of eliminating mundane and routine tasks such as calculations and running audit tests, giving the auditors the energy to make critical judgements and decisions that would be crucial for the authenticity of the audit reports. Besides, audit technology such as audit software also gives firms the capability of catering to their client's requirements. Clients may sometimes have different tailored requests for their reports, such as summaries of their financial patterns or insider information on their company's wealth that only the auditors would know of after their financial audits. Auditors are able to cater to the requests of these clients through the usage of their audit software, thereby ensuring client satisfaction.

Certainly, the implementation of new technology can also bring about numerous drawbacks for the unprepared. The participants emphasised costs during the first adoption of technology. Technology made for businesses are not cheap, as such, they shared on how their organisations have quantified the increase in productivity and efficiency of their audits by monitoring their staff with regards to their output of audit reports and the speed in which they bill a client. To fully justify the costs of adopting expensive technology, these steps are crucial to ensure that the organization did not make a wrong decision in technology investments. It is crucial for the audit firms to understand that it is very easy for technology to go out of control and allow for the ease of criminal activities. Furthermore, the participants also mentioned that it is important to train and impart knowledge of IT and technology to their staff, seeing as their company is adopting a more data-driven approach and computerised audits.

One of the limitations of this study is that the number of participants is relatively small. Although there is no straightforward answer to how many participants are required for perfect qualitative research, the "rule of thumb" suggests around thirty participants for a safe and comprehensive gathering of data (Greenbook, 2023). Vasileiou et al. (2018) noted that due to how subjective qualitative research is, the determination of sample sizes stem from the "methodological, theoretical, epistemological, and ideological pluralism" that encompasses the nature of qualitative analyses. Simply put, sample size depends on the quality of the answers given by participants. Therefore, it would be advisable to have a higher sample size similar study in the future to account for error margins whereby participants are not able to provide favourable answers towards the research objectives.

Besides, as research towards this topic is still relatively in its infancy, it would be pertinent for future researchers to explore further into this topic when there is a deeper understanding or study towards technological advancements in the accounting world. This is because future researchers would have more material to draw upon for their literature review. Another recommendation for future researchers would be to expand upon their location of study. Klang Valley may have the most concentrated population in Malaysia, there are still untapped knowledge in other states which may differ from the experience of those living in the Klang Valley area. Hence, it would be lucrative for future researchers to interview auditors from other states.

Finally, this research is conducted in a qualitative manner which gathers experiences and expertise from its participants. It is recommended that, in the future, perhaps a quantitative approach would yield different yet interesting results. Combining both qualitative and quantitative approaches would also add comprehensiveness to the results.

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