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Navigating New Terrain: Data Analytics In Auditing

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Abstract

The increasingly flexible working environment triggered by the pandemic pushed audit firms into rethinking how auditing should revolve around new technologies. Addressing operational sustainability and resilience became increasingly crucial in this age of disruption. As more and more businesses use big data and data analytics tools to enhance efficiency and effectiveness, applying data analytics in auditing can focus attention and resources to better manage risks. According to the global survey conducted by the International Federation of Accountants in 2018, Small and Medium Practices (SMP) in Malaysia generated 42% of revenues from auditing and assurance services. However, more than one-third of the SMPs in Malaysia stated zero technology development, which implied that the SMPs have either not utilized technology-enabled data analytics or have limited application of data analytics in their auditing practices. This study intends to explore the current practices in applying data analytics in auditing, its opportunities and challenges, especially in the Malaysian context. Questionnaire surveys will be distributed to gauge the current understanding of data analytics among audit firms registered with the Malaysian Institute of Accountants and to solicit responses on the perceived opportunities and challenges in adopting data analytics in auditing. The findings of this study could provide a glimpse of how auditors could effectively create value with the applications of technologies and navigate businesses in this new normal era. By embracing change, auditors could transform disruptions into opportunities for firms to recalibrate for a better future.

Keywords:

Data analytics, Audit, Value creation, Business sustainability

Introduction

The Covid-19 pandemic has brought about fundamental changes in the way firms conduct their businesses, accelerated digital adoption and catalysed new changes. The increasing use of online services has fast-tracked the generation and adoption of big data. This affects not only all aspects of businesses but also affects the auditors in providing timely assurance around the risks with new technologies. Since audit quality depends on how well the auditors are in selecting and analyzing the voluminous data resources (Alles & Gray, 2016), auditors need to be conscious in choosing the data and data analytics tools to obtain sufficient and appropriate audit evidence in forming audit opinions (Brown-Liburd, Issa, & Lombardi, 2015).

Data analytics is a process of examining and analyzing data to draw meaningful conclusions from the massive portfolio of data; it is about leveraging value from data (Acito & Khatri, 2014; EY, 2015). It has been highlighted as an effective tool in audit engagements (Wang & Cuthbertson, 2015) as audit quality is improved since auditors could have a better understanding of clients' data and risk identification (ACCA, 2017). Big data analytics has transformed the accounting profession from merely record-keeping to offering predictions and foresight that are useful to support and guide businesses (Lim et al., 2018).

The growing use of big data, which is referred to as the dataset that is high-volume, high-velocity, high-variety and potentially of high value (Laney, 2001; Merritt-holmes, 2016), and the complex data analytics used in businesses for their better understanding of the market in decision making and accounting judgement, can significantly affect the financial statements if the data are defective (Appelbaum, 2016). External auditors need to access messy big data to gain an understanding of the client and industry, and to conduct risk analysis and reasonableness tests (Appelbaum, 2016). Thus, the changing business functions and business capabilities require the auditors to move towards big data and data analytics and integrate more advanced predictive and prescriptive-oriented modes in their audit or assurance function (Appelbaum, Kogan, & Vasarhelyi, 2017).

Cao, Stewart, & Chychyla (2015) propose that external auditors can adopt big data analytics in practice to identify and evaluate engagement risk, focus resources on more risky areas of the business, confirm the existence of events, validate reporting elements, identify fraud risks, fraudulent or high-risk activities and to review every transaction to enhance efficiency and effectiveness of the audit. Other research suggests that data analytics can be used for continuous auditing in financial statement audits (Feung & Thiruchelvam, 2020).

Problem statement

As more and more businesses use big data and business analytics for their operations and decision-making, the conventional methods of data handling may not be effective in generating sufficient and appropriate evidence to form an audit opinion. Hence, data analytics are embedded in the audit practices in various areas in the Big 4 firms to enhance audit quality. For instance, KPMG applies KPMG graphics to map the client's financial process transactions flows, to identify unpredicted double entries, larger value, and greater risk populations of

transactions, and to examine the detail of the individual transactions that make up the population. PwC applies 'Halo for Journals' to identify which are the specific journals that may need to be tested; EY embraces Helix and graphics to identify risks, and unusual trends, and to inspect the data to aid with their testing (ICAEW, 2016). Deloitte uses Argus and advanced analytics applications to review a wide range of document types, identify risks, perform journal-entry testing, to analyze volumes of financial information from SEC filings for potential misstatements, fraud, and failure risks for all public companies (Raphael, 2017).

The global survey conducted by IFAC in 2018 reveals that Malaysia's small and medium practices (SMP) generate 42% of revenues from auditing and assurance services as compared to the global average and Asian region average of 38% and 59% respectively. However, more than one-third (36%) of the SMPs in Malaysia stated zero technology development as compared to the global and Asian region averages of 26% and 25% respectively (Yong, 2019). This may imply that SMPs in Malaysia have either not developed/utilized technology-enabled data analytics or have limited application of data analytics in their auditing practices. The Covid-19 pandemic should push audit firms into rethinking how auditing could capitalize the emerging technologies to tackle operational sustainability and business resilience.

Auditors need to have knowledge and skills to execute high-quality audits in the era of rapid growth in data volume, continuously changing business models and shifting towards automation. According to the survey conducted by ACCA in 2019, 62% of members and affiliates had not heard the terms for instance machine learning, robotic process automation, artificial intelligence, data analytics, and natural language processing, or these respondents may have heard but not knowing the terms or had only a basic understanding of these terms (ACCA, 2019). However, applications and adoption of big data and data analytics tools could focus attention to better manage risks and thus, enhance efficiency and effectiveness in auditing.

There is a lack of study on the current practice of applying data analytics in audit firms, especially in the Malaysian context. More research is needed in this area since the unprecedented disruption that pushed auditors to rethink audit plans and priorities, change in working models and the emergence of a fresh set of risks to be addressed. Utilizing data analytics in auditing could provide a new horizon for audit firms to create value for their clients and businesses.

Research objectives

The purpose of this study is to explore how data analytics is applied in Malaysian auditing firms and to examine to what extent the perceived opportunities and perceived challenges of data analytics could affect auditors in embracing data analytics into their audit practices. The objectives of this study are:

1. To explore the current practices of data analytics in audit firms in Malaysia

2. To examine whether perceived opportunities of data analytics have a significant effect on the adoption and application of data analytics in audit firms in Malaysia.

3. To determine whether perceived challenges of data analytics have a significant effect on the adoption and application of data analytics in audit firms in Malaysia.

Literature Review

Data analytics in auditing

The adoption of information technology in auditing has been extensively studied in the previous decades. Initially, empirical studies have been conducted on the adoption of audit technology in general and more specific information technology applications such as computer-assisted audit techniques and tools (CAATTs) after the large-scale adoption of enterprise resource planning which requires IT-based audit (Krieger, Drews, & Velte, 2021). Recently new technologies such as data analytics, artificial intelligence (AI), robotic process automation (RPA), and big data have emerged and are extensively discussed.

Emerging technologies such as data analytics are impacting the accounting profession, particularly in the audit and assurance process. Due to the technology advances, there is a need for auditors to innovate and transform their approaches to auditing. Extensive academic articles have been written relating to the future of data analytics in auditing. Prior research has offered mainly normative accounts in data analytics and audit. Insufficient research investigated potential areas, opportunities and challenges of data analytics in auditing (Appelbaum, Kogan, & Vasarhelyi, 2018; Chan, Chiu, & Vasarhelyi, 2018). However, little empirical research addressed the issues related to data analytics in auditing (Earley, 2015).

However, several studies explored the current practices of data analytics in auditing. Eilifsen, Kinserdal, Messier, & McKee (2020) explore the use of data analytics in current audit practice in Norway. The authors found that the use of data analytics is relatively limited and the use of advanced data analytics tools is rare. Salijeni, Samsonova-Taddei, & Turley (2019) explored the big data and data analytics adoption in audit firms in the United Kingdom and audit regulatory bodies from the European Union countries. From the evidence presented by Eilifsen et al., (2020) and Salijeni et al. (2019), it can be concluded that the current adoption of data analytics in auditing remains limited.

Several studies were done on the motivations and intentions to use data analytics in the audit. Dagilienė & Klovienė (2019) and Mohamed, Muhayyidin, & Rozzani (2019) explore audit firms' intentions to adopt big data and big data analytics in external auditing. Apart from external audits, a few articles focussed on data analytics in internal audits. Prior studies mainly focus on the use of data analytics in external audits and pay little attention to the application of data analytics in internal audits. For example, Islam & Stafford (2022) and Rakipi, De Santis, & D'Onza (2021) examine the factors driving the adoption of analytics in the internal audit function.

Research done by Austin, Carpenter, Christ, & Nielson (2021) investigated the interaction of auditors, company managers, and regulators in the development of data analytics throughout the financial reporting environment whereas Jacky & Sulaiman (2022) observed the interested stakeholders in the influencing factors in using data analytics in financial statement audits. Other research done by Krieger et al. (2021) uses process theory to examine the process of adoption in advanced data analytics among audit firms. The study discussed how the process of adoption is affected by factors like technology, organisations and the environment.

There are few studies done focusing on the impact of data analytics on the audit process. Certainly, data analytics will lead to a change in the audit process including audit sampling and evidence gathering. Huang, No, Vasarhelyi, & Yan (2022) discussed the challenges related to audit data analytics and machine learning on full population testing to overcome the sampling risk issues. Brown-Liburd & Vasarhelyi (2015) addressed the change of concept and nature of audit evidence due to emergence of the new technologies.

The amount of literature on data analytics in auditing has grown over the last few years, but while particular attention has been paid to the adoption in developed countries, a few studies were conducted in developing countries, for example, Mohamed et al. (2019) investigates the influencing factors of the intention to adopt CAATs in their audit process in Malaysia. Several researchers reported that auditors need further training in data analytics techniques to adopt data analytics to enhance their audit performance in Malaysia and Egypt Mohamed A. Wahdan & Mohamed A. Wahdan (2019) examined the relationship of data analytics competency with the external auditors' performance and religiosity in Malaysia.

Although more and more research is being carried out on data analytics in auditing, the application and adoption of data analytics remain lagging in the audit profession, especially in developing countries such as Malaysia. According to Brown-Liburd et al. (2015) research has shown that auditors in developed countries more commonly use big data analytics when conducting the audit. Thus, further investigation is needed to understand the factors that influence the adoption or non-adoption among audit firms in developing countries.

Opportunities for data analytics adoption

Data analytics provide audit firms with the opportunities to improve their audit process such as audit quality and efficiency as well as providing clients with value-added services.

Audit firms can use data analytics as a tool to improve the quality as well as efficiency of auditing (Dagilienė & Klovienė, 2019; Earley, 2015; Salijeni et al. 2019). Auditors can deliver more relevant audits by analysing client data early in the audit process and begin identifying areas that need further investigation. Data analytics enable the auditors to identify anomalies, trends, correlations, and fluctuations, and show items where risks can be present. In addition, auditors also can assess the associated risk based on the entire population of the transactions and thus enhance the effectiveness and efficiency of the audit process (Huang et al., 2022).

The use of data analytics in audit firms helps improve clients' services through enhanced communication and a better understanding of clients' business. Data analytics will lead to better risk identification, more accurate control assessments, and more timely and relevant audit reporting (WorldBankGroup, 2017).

Challenges to data analytics adoption

Despite the benefits of audit data analytics, the current adoption of data analytics among audit firms is limited due to various issues.

According to Dagilienė & Klovienė (2019), the characteristics of audit firms such as firm size, structure as well as auditors with experience in data analytics may cause audit firms to reconsider adopting data analytics in the audit process. Salijeni et al. (2019) also identified a lack of skills in applying data analytics among auditors considered one of the challenges in data analytics adoption. Apart from the skill set of auditors, data availability, relevance, and integrity of data are also a concern (Earley, 2015). Haddara, Su, Alkayid, & Ali (2018) identified a lack of technological preparedness in audit firms, such as a lack of hardware infrastructure and potential issues with data control and security as well as issues with data integration and storage as challenges in data analytics adoption.

Huang et al. (2022) look at the adoption of data analytics by audit firms focusing on the issues related to full population testing. This includes implementation cost for full population testing which can be high, the difficulty for auditors to understand the inner working mechanism of several advanced audit data analytics tools that require a high-level knowledge of algorithms or "Black Box" and the difficulty in documenting and justifying the use of data analytics techniques due its the subjectivity.

Additionally, the excessive liability burden imposed upon auditors poses another challenge to the adoption of data analytics (Earley, 2015; Salijeni et al., 2019). Using the traditional audit process with audit sampling, potential errors are allowed to exist due to the current auditing standards that provide "reasonable assurance" that the financial statements are "fairly stated, in all material respects" (Huang et al., 2022).

Conceptual Framework

A proposed research framework for this study is constructed based on reviews of past studies as discussed above. In this study, the dependent variable is the application and adoption of data analytics, and the independent variables are factors that are expected to influence the auditors in applying and adopting data analytics which is categorized into the perceived opportunities and perceived challenges. A conceptual framework for this research is indicated in Figure 1.

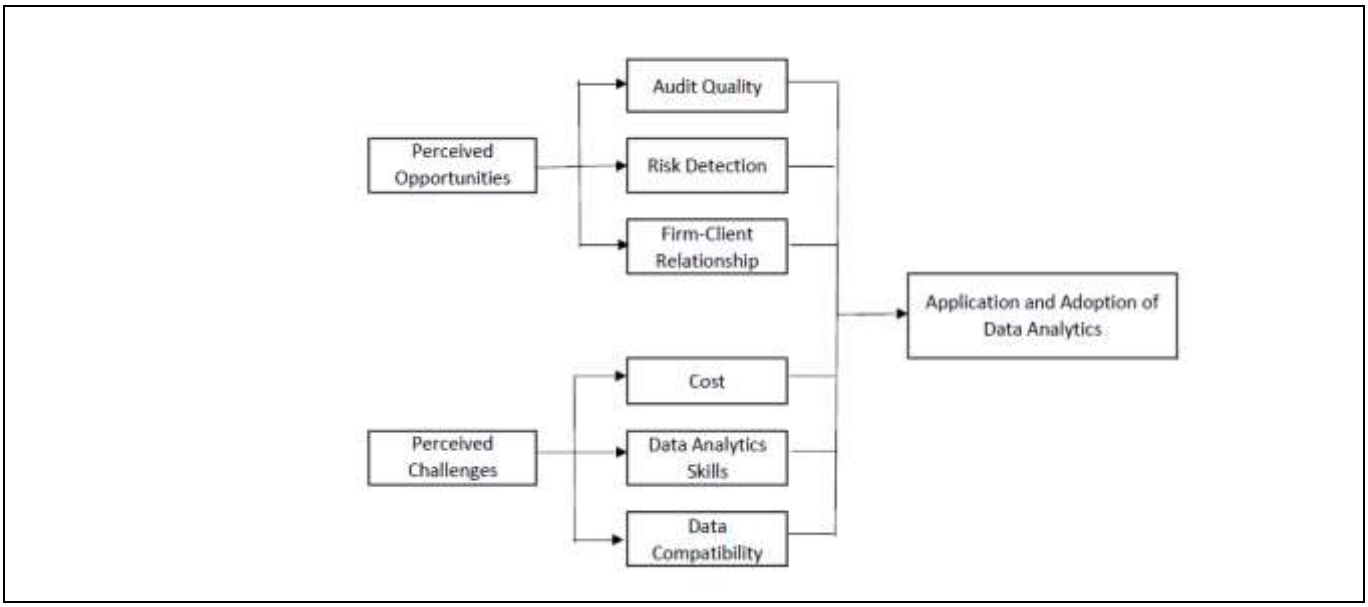

Figure 1: Conceptual Framework

Research Methods

This study will utilize the survey questionnaire method to gauge the current understanding of data analytics among audit firms registered with the Malaysian Institute of Accountants (MIA). Data collected from the survey questionnaire will be analyzed using SPSS.

The total number of audit firms registered with MIA as of 30 April 2021 is 1,482 firms. 300 survey questionnaires will be sent to these audit firms to solicit responses. This represents approximately 20% of the population. To achieve a higher response rate from the audit firms, assistance from MICPA and MIA shall be sought.

Conclusions

Emerging technologies such as data analytics are undoubtfully impacting how audit firms should revolve to address operational sustainability and resilience in businesses. Whilst Covid-19 is a crisis, it is also making change mandatory. Auditors need to innovate and transform their approaches to auditing with the use of big data and data analytics tools, especially in terms of audit sampling and evidence gathering. Although there is limited adoption of data analytics among audit firms currently, the opportunities and challenges from the findings of this study could provide a glimpse of how auditors could effectively create value with emerging technologies and navigate businesses in this new normal era. Hence, with the accelerating pace of digital transformation, audit firms with data analytics adoption could recalibrate resources and emerge as the strongest in the industry. Therefore, the use of technologies such as data analytics in auditing will unquestionably revolutionize and shape the future of auditing worldwide.

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