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Exploring the Adoption of Audit Data Analytics Among External Auditors in Malaysia

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Abstract: This study examines the current adoption of Audit Data Analytics (ADA) among external auditors in Malaysia and explores their perceptions regarding adoption plans, perceived opportunities, and challenges associated with ADA implementation. While ADA has the potential to transform traditional audit practices, its adoption remains inconsistent across audit firms, raising concerns about readiness and perceived benefits. A quantitative survey methodology was adopted, using a structured questionnaire distributed to external auditors from audit firms in Klang Valley, Penang, and Johor. A total of 221 responses were collected and analyzed using descriptive statistics and reliability assessments via SPSS. The findings reveal that while many firms recognize the benefits of ADA, such as improved audit quality and greater transaction testing capabilities, actual adoption levels vary significantly across audit areas. Key challenges identified include client concerns over data confidentiality, insufficient ADA expertise, and inadequate technological infrastructure. This study contributes to current literature by providing empirical insights into ADA adoption within Malaysia's external auditing sector, an area previously underexplored. The findings offer practical implications for audit firms, regulators, and professional bodies seeking to promote ADA adoption and advance digital transformation in the auditing profession.

Keywords: *Audit Data Analytics (ADA), External Auditing Practices, Digital Transformation, Adoption Barriers, Malaysian Audit Firms*

1. Introduction

The evolution and latest innovations in technology over the past three decades have enabled auditors to leverage several modern technologies within the auditing sector (Mugwira, 2022). The auditing profession is increasingly exploring the usage of technology to enhance audit quality, efficiency, and effectiveness. One such innovation is the use of Audit Data Analytics (ADA), which has the potential to transform traditional audit practices. However, the level of adoption and the perceptions of external auditors regarding ADA remain underexplored, particularly in the Malaysian context. External auditors' views on the opportunities and challenges in adopting ADA, as well as their firms' plans to adopt this technology, are critical in understanding the pace and direction of this shift. The lack of comprehensive insights into ADA adoption in current audit practices, coupled with the uncertainties surrounding its perceived benefits and barriers, may hinder the broader implementation of data analytics in auditing.

This study seeks to address this gap by examining the current state of ADA adoption among external auditors in Malaysia and exploring their perceptions on the adoption timeline, the opportunities, and the challenges that come with embracing ADA in the audit process. Understanding these perspectives will be vital for audit firms, regulators, and professional bodies aiming to facilitate the successful integration of ADA into audit practices. To understand the current practices of ADA implementation and the perceptions of the external auditors, the following research questions are formulated:

- What is the current state of ADA adoption among external auditors in Malaysia?
- What are the perceptions of external auditors regarding their firm's plan to adopt ADA?
- What are the perceptions of external auditors regarding the opportunities of adopting ADA?
- What are the perceptions of external auditors regarding the challenges of adopting ADA?

The rest of this paper is structured as follows. Section 2 presents the literature review, and this is followed by

Section 3, which discusses the research methodology. The next section presents the findings and discussion of the research, and finally, section 5 concludes the study, research implications and future research agenda.

2. Literature Review

Recent literatures highlight the growing intersection of the accounting field and digital technologies such as artificial intelligence (AI) and data analytics. Ellili, Nobanee, Haddad, Alodat, and AlShalloudi (2024) identified AI applications as an emerging frontier in forensic accounting research, emphasizing their potential for enhancing fraud detection and bridging gaps in existing audit practices. Supporting this, Chávez-Díaz, Aquiño-Perales, De-Velazco-Borda, Villagómez-Chinchay, and Flores-Sotelo (2024) conducted a bibliometric analysis confirming AI's expanding role in accounting and auditing, particularly in automating fraud detection and supporting financial decision-making processes. Similarly, Mustafa Airout, Abu Azam and Airout (2024) highlighted global trends in forensic accounting's adoption of data analytics tools to improve investigative accuracy and fraud risk management, though they also noted persistent challenges such as data privacy concerns and limited technical expertise. Collectively, these studies highlighted the accelerating digital transformation of auditing and accounting, as well as the technological factors shaping its implementation.

Audit Data Analytics (ADA) is a key part of digital transformation, using advanced tools to analyze large datasets for risk identification, fraud detection, and improving audit assurance. The benefits of ADA adoption are well-documented in the literature. Salijeni, Samsonova-Taddei, and Turley (2019) described ADA as enabling auditors to transition from sample-based methods to full-population data testing, thereby increasing the scope and reliability of audit findings. Brown-Liburd and Vasarhelyi (2015) further emphasize ADA's capacity to support fraud detection, improve risk assessment, and strengthen audit evidence through data-driven insights. Eilifsen, Kinserdal, Messier and McKee (2020) argued that ADA enabled more comprehensive transaction analysis, improved anomaly detection and supported the generation of actionable audit insights. By facilitating real-time and continuous audit processes, ADA enhances audit efficiency and quality. Technologies such as big data analytics enhance audit productivity, financial management, and risk management processes (Hanfy, Alakkas & Alhumoudi, 2024).

However, practical adoption remains uneven, particularly in applying advanced ADA techniques such as predictive analytics and machine learning. From a practitioner perspective, Vitali and Giuliani (2024) reported that digitalization can lead to changes in the organizational structure of audit firms and further widen the gap between Big Four and non-Big Four firms. This technological divide is supported by Eilifsen et al. (2020), who highlighted that the use of Audit Data Analytics (ADA) remains relatively limited, with the adoption of more advanced ADA techniques being particularly rare. Liew, Boxall and Setiawan (2022) provided evidence of ADA adoption within Big Four firms. Their study highlighted that ADA implementation requires not only technological investments but also staff training, leadership support, and organizational restructuring. Despite these efforts, challenges such as data integration complexity, security concerns, and internal resistance persist even among large firms. The study also highlights that smaller audit firms often lack the resources and infrastructure necessary for effective ADA integration.

In Malaysia, Jacky and Sulaiman (2022) found that while auditors recognize ADA's potential to improve fraud risk evaluation, substantive testing, and audit planning, its adoption remains limited, especially among small and mid-tier firms. Most Malaysian auditors reportedly rely on basic tools like Excel rather than more advanced applications such as Power BI or Tableau, due to constraints in technical skills, financial resources, and organizational readiness. Regulatory ambiguity and a lack of clear professional guidelines further compound these adoption challenges.

In conclusion, while global and regional studies highlighted ADA's transformative potential in enhancing audit effectiveness, fraud detection, and risk management, adoption remains hindered by technological, organizational, and regulatory constraints. Larger firms are more advanced in ADA implementation, whereas small and mid-sized firms, particularly in Malaysia, lag due to practical and structural challenges. Existing studies focus mainly on how audit firms, at the organizational level, plan and manage the adoption of Audit Data Analytics (ADA), with limited attention given to how practitioners themselves use and perceive these technologies in practice. To address this gap, the present study explores current ADA practices and the

perceptions of Malaysian external auditors regarding its opportunities and barriers, providing a practical understanding that complements the broader theoretical discourse.

3. Methodology

A survey questionnaire was developed to assess the current adoption and plans to adopt the ADA among audit firms. The survey questionnaire is sent via email to auditors attached to the audit firms located in Klang Valley, Penang, and Johor using the list of audit firms registered with MIA. A total of 300 questionnaires were sent out, representing approximately 20% of the population. The respondents were selected through a stratified random sampling method to ensure representation across different sizes and types of audit firms. Follow-up emails are made at intervals, and regular personal telephone calls are made to solicit responses from these audit professionals. Data collected from the survey questionnaire are analyzed using the Statistical Package for the Social Sciences (SPSS).

Reliability Test Analysis

Cronbach's Alpha is a systematic measure of the scale and scores of variances (Brown, 2002). This is a useful tool to measure the reliability score and results. The score of scale reliability is a correlation efficiency measure between the range of 0 to 1. There is a rule of thumb pertaining to the Cronbach's alpha value as shown in Table 1.

Table 1: Rule of Thumb on Cronbach's Alpha

Alpha Coefficient Range	Strength of Association
<0.6	Poor
0.6 to < 0.7	Moderate
0.7 to < 0.8	Good
0.8 to < 0.9	Very Good
0.9	Excellent

Source: (Hair, J. F. Jr., Babin, B., Money, A. H., & Samouel, 2003).

The reliability test was conducted based on 221 respondents. The results of the reliability test in Table 2 below showed that all constructs have Cronbach's Alpha values greater than 0.8. In conclusion, all constructs have met the required reliability.

Table 2: Summary of Reliability Test Analysis

No.	Components	Cronbach's Alpha	No. of items
1	Audit Data Analytics Applications	0.947	17
2	Plans to adopt and apply data analytics	0.953	17
3	Perceived Opportunities	0.951	10
4	Perceived Challenges	0.862	11

Source: Developed for the research.

4. Findings and Results

The results section will present the findings from the data analysis, including descriptive statistics, reliability, and validity assessments.

Descriptive Statistics

This section will provide an overview of the demographic characteristics of the respondents, such as firm size, number of years in operation, and the extent of ADA use.

Demographic Characteristics

Gender

The survey questionnaire gathered perceptions from 132 (59.7%) male respondents and 89 (40.3%) female respondents (N = 221) from the audit professionals in the external audit field.

Table 3: Frequency Distribution for Gender

Gender	Frequency, N =221	Percent
Female	89	40.3
Male	132	59.7

Source: Developed from the research.

Age

The largest age group is between 25-34 years (29.0%), followed by those between 35-44 years (23.1%), 45-54 years (22.2%), over 55 years (18.1%), and the smallest age group is less than 24 years (7.7%).

Table 4: Frequency Distribution for Age

Age	Frequency, N =221	Percent
< 24	17	7.7
25 - 34	64	29.0
35 - 44	51	23.1
45 - 54	49	22.2
> 55	40	18.1

Source: Developed from the research

Qualification

Respondents holding professional qualifications only are the highest with 74 (33.5%), and those with both professional qualifications, either undergraduate and postgraduate qualifications, are 49 (22.2%) and 4 (1.8%) respectively. Only one respondent (0.5%) attained a PhD qualification. While 81 (36.7%) indicated that they only possessed professional qualifications.

Table 5: Frequency Distribution for Qualification

Qualification	Frequency, N =221	Percent
Bachelor degree	74	33.5
Master degree	4	1.8
PhD	1	0.5
Professional qualification	81	36.7
Professional qualification, Bachelor's degree	49	22.2
Professional qualification, Master's degree	4	1.8
Bachelor's degree, Master's degree	5	2.3
Bachelor's degree, Master's degree, Professional qualification	3	1.4

Source: Developed from the research

Years of Experience

More than half of the respondents have been in the industry for a while, with over 10 years of experience, with 130 (58.8%). The remaining respondents' years of experience are almost evenly distributed. With both less than 2 years and between 2-4 years with 23 (10.4%) each, between 5-7 years with 25 (11.3%), and 8-10 years with 20 (9.0%).

Table 6: Frequency Distribution for Years of Experience

Years of Experience	Frequency, N =221	Percent
< 2 years	23	10.4
2 - 4 years	23	10.4
5 - 7 years	25	11.3
8 - 10 years	20	9.0

More than 10 years	130	58.8

Source: Developed from the research

Current Position

A significant majority of the respondents are partners, totaling to 100 (45.2%) responses, followed by audit managers with 49 (22.2%), junior auditors with 30 (13.6%), semi-seniors with 29 (13.1%), assistant audit manager with 10 (4.5%) and senior auditor with 3 (1.4%) respondents respectively. Overall, decision makers consisting of partners and audit managers make up 67% of the survey respondents.

Table 7: Frequency Distribution for Current Position

Position	Frequency, N =221	Percent
Junior Auditor	30	13.6
Semi-Senior	29	13.1
Senior Auditor	3	1.4
Assistant Audit Manager	10	4.5
Audit Manager	49	22.2
Partner	100	45.2

Source: Developed from the research

Firm Size

Audit firms operating as sole proprietors make up 34.4% (87 firms), followed by firms with 2-4 partners with 38.0% (84 firms), more than 10 partners with 15.8% (35 firms), and the smallest group with 5-9 partners with 6.8% (15 firms).

Table 8: Frequency Distribution for Firm Size

Firm Size	Frequency, N =221	Percent
Sole proprietor	87	39.4
2 - 4 partners	84	38.0
5 - 9 partners	15	6.8
> 10 partners	35	15.8

Source: Developed from the research

Current Practices of Audit Data Analytics (ADA)

Table 9 Explained the current practices of data analytics among audit firms. The “areas” column lists the seventeen audit areas or tasks being analyzed in the audit process. Frequency indicates the number of occurrences or instances related to each audit area. The “percent” column represents the percentage of occurrence of each audit area out of the total. These frequencies and percentages indicate the relative importance or focus on each area within the context of data analytics adoption among the audit firm.

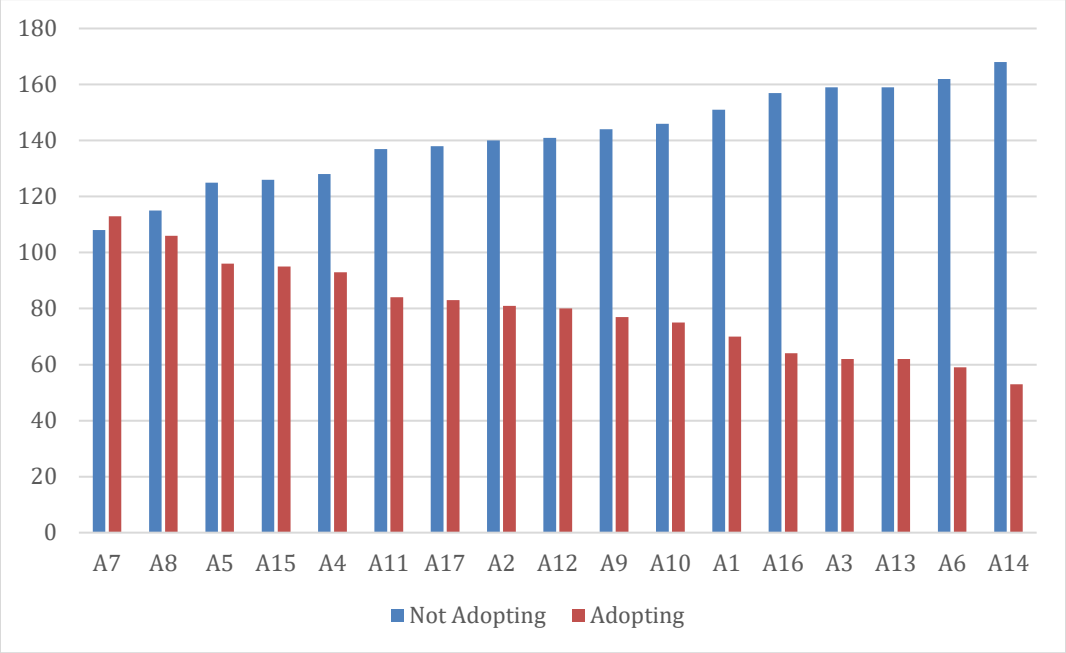
According to Figure 1, the area of map sales, receivables, receipts processes (A7) has the highest frequency of 113, accounting for 51.1% of the total occurrences. Map purchase, payables, and payment processes (A8) closely follow with a frequency of 106, representing 48.0% of the total occurrences. Analyze journal entries with unusual frequency or timing of entries (A5) and identify significant changes in general ledger account balances between years and correlations (A15), also have relatively high frequencies at 96 and 95, respectively. Analyze journal entries with unusual amounts (A4) follows closely with a frequency of 93. The map production process to track inventory movements (A6) and map costs charged to fixed assets, payments, and capitalizing labor costs (A14) has the lowest frequency at 59 and 53, respectively.

Table 9: Current Practices of ADA among audit firms

	Areas	Frequency	Percent
A1	Test unauthorized log entries	70	31.7
A2	Divide accounts and log entries	81	36.7
A3	Test inactive accounts	62	28.1
A4	Analyze journal entries with unusual amounts	93	42.1
A5	Analyze journal entries with unusual frequency or timing of entries	96	43.4
A6	Map production process to track inventory movements	59	26.7
A7	Map sales, receivables, and receipts processes	113	51.1
A8	Map purchase, payables, payment processes	106	48.0
A9	Map customers' orders, shipping documents, and sales invoices	77	34.8
A10	Map shipping documents, sales invoices, and receipts	75	33.9
A11	Map purchase orders, supplier invoices and payments	84	38.0
A12	Map dates of suppliers' invoices with dates on purchase orders	80	36.2
A13	Map the pay earned by employees to the amount paid to employees	62	28.1
A14	Map costs charged to fixed assets, payments, and capitalizing labor costs	53	24.0
A15	Identify significant changes in general ledger account balances between years and correlations	95	43.0
A16	Search for loans receivable and interest-bearing liabilities for abnormally high or low interest rates	64	29.0
A17	Search for duplicate purchase orders, duplicate payments to suppliers, or any unusual information relating to suppliers	83	37.6

Source: Developed from the research

Figure 1: Adoption and non-adoption of DA



Source: Developed from the research

Plan to adopt Data Analytics.

Table 10 Shows the plan to adopt data analytics in relation to the different audit areas. The table categorizes the plan to adopt data analytics within 2 years, within 3-5 years, no plan to adopt, and not applicable (NA). These timeframes represent the organizations' intended plans to incorporate data analytics into their audit processes.

Table 10: Plan to adopt Data Analytics

	Areas	Within 2 years	Within 3-5 years	No plan	NA
A1	Test unauthorized log entries	43	55	53	70
A2	Divide accounts and log entries	35	56	46	84
A3	Test inactive accounts	41	53	63	64
A4	Analyze journal entries with unusual amounts	29	57	45	90
A5	Analyze journal entries with unusual frequency or timing of entries	29	53	47	92
A6	Map production process to track inventory movements	42	61	59	59
A7	Map sales, receivables, and receipts processes	30	48	37	106
A8	Map purchase, payables, payment processes	34	47	39	101
A9	Map customers' orders, shipping documents, and sales invoices	43	52	47	79
A10	Map shipping documents, sales invoices, and receipts	40	57	45	79
A11	Map purchase orders, supplier invoices, and payments	38	55	44	84
A12	Map dates of suppliers' invoices with dates on purchase orders	35	53	49	84
A13	Map the pay earned by employees to the amount paid to employees	39	61	62	59
A14	Map costs charged to fixed assets, payments, and capitalizing labor costs	42	63	62	54
A15	Identify significant changes in general ledger account balances between years and correlations	33	52	42	94
A16	Search for loans receivable and interest-bearing liabilities for abnormally high or low interest rates	35	66	52	68
A17	Search for duplicate purchase orders, duplicate payments to suppliers or any unusual information relating to suppliers	37	56	46	82

Source: Developed from the research

In several audit areas, such as test unauthorized log entries (A1), map customers' orders, shipping documents and sales invoices (A9), map costs charged to fixed asset, payments, and capitalizing labor costs (A14) and map production process to track inventory movements (A6), a significant number of organizations have indicated plans to adopt data analytics within 2 years (Figure 3). This suggests that these areas are gaining attention, and organizations recognize the need to leverage data analytics shortly to enhance their audit capabilities.

According to Figure 4, audit areas such as search for loans receivables and interest-bearing liabilities for abnormally high or low interest rates (A16), map costs charged to fixed asset, payments, and capitalizing labor costs (A14), map production process to track inventory movements (A6) and map pay earned by employees to amount paid to employees (A13) revealed that a significant number of organizations have indicated plans to

adopt data analytics within the next 3-5 years.

Figure 2 Showed the plan to adopt data analytics among audit firms in Malaysia. It highlights the organizations' intended plans to adopt data analytics in different audit areas. It shows the varying adoption plans to adopt data analytics in various audit areas among audit firms in Malaysia. While some areas are expected to see adoption within 2 years or the next 3-5 years, others have no plan to adopt data analytics, depending on the audit areas. The varying adoption plans reflect the diverse approaches and priorities of organizations in integrating data analytics into their audit processes based on their specific needs, capabilities, and strategic objectives.

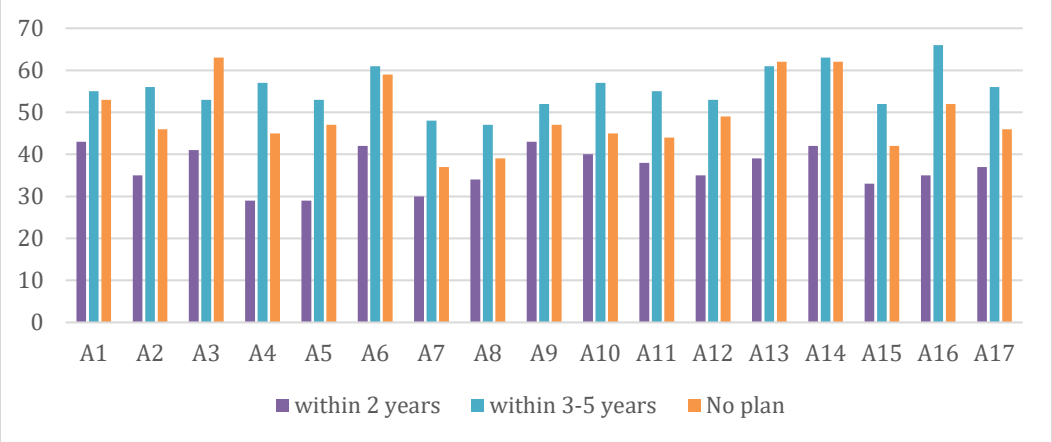
The results also highlight that different audit areas have varying adoption plans. Some areas, like mapping sales, receivables, and receipts processes (A7) and mapping purchase, payables, and payment processes (A8), have organizations with a mix of plans, including adoption within 2 years, adoption within 3-5 years, no specific plan, or considering it not applicable or currently adopting. This indicates that the adoption of data analytics in these areas depends on factors specific to individual organizations, such as resource availability, technological readiness, and strategic priorities.

In certain cases, organizations have indicated either no specific plan to adopt data analytics or have found it not applicable to the respective audit areas. This could be due to various reasons, such as a lack of perceived value, limited resources, or the nature of the audit area not requiring extensive data analytics.

In several audit areas, such as test unauthorized log entries (A1), map customers' orders, shipping documents and sales invoices (A9), map costs charged to fixed asset, payments, and capitalizing labor costs (A14) and map production process to track inventory movements (A6), a significant number of organizations have indicated plans to adopt data analytics within 2 years (Figure 3). This suggests that these areas are gaining attention, and organizations recognize the need to leverage data analytics shortly to enhance their audit capabilities.

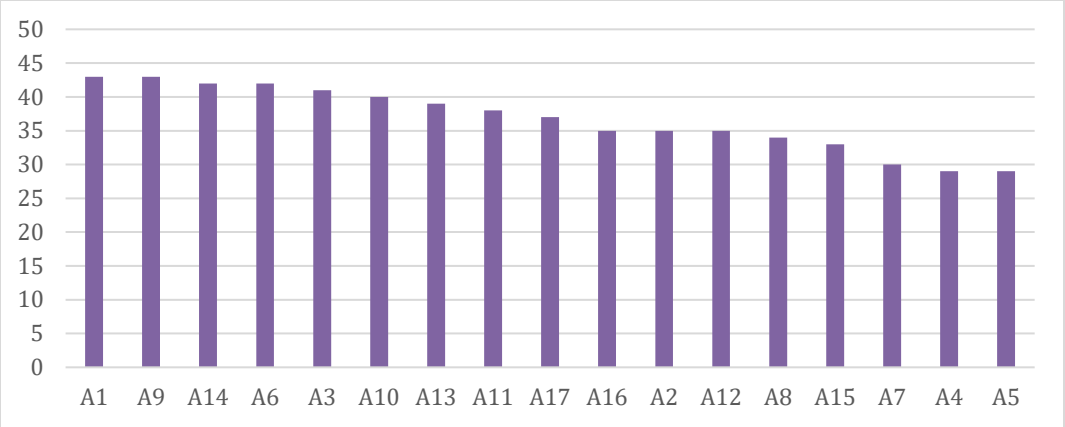
According to Figure 4, audit areas such as search for loans receivables and interest-bearing liabilities for abnormally high or low interest rates (A16), map costs charged to fixed asset, payments, and capitalizing labor costs (A14), map production process to track inventory movements (A6) and map pay earned by employees to amount paid to employees (A13) revealed that a significant number of organizations have indicated plans to adopt data analytics within the next 3-5 years.

Figure 2: Plan to adopt DA



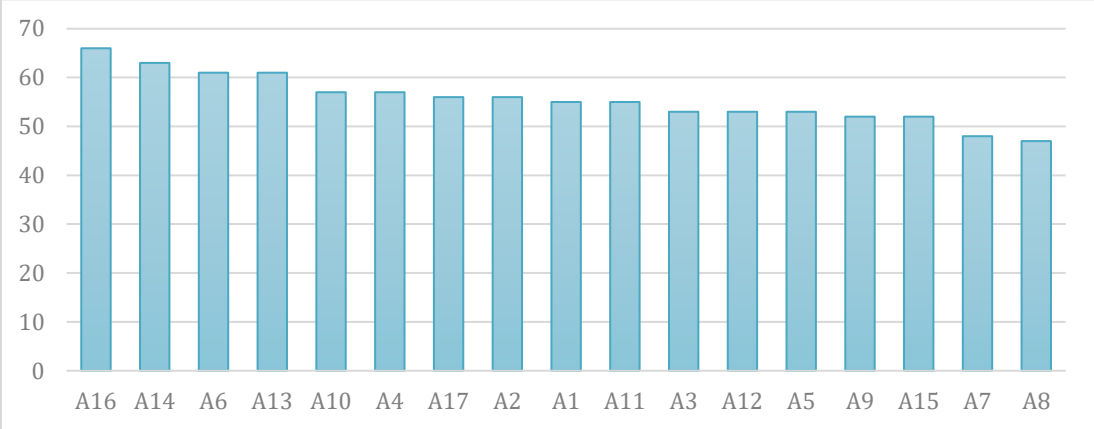
Source: Developed from the research

Figure 3: Plan to adopt DA within 2 years



Source: Developed from the research

Figure 4: Plan to adopt DA within 3-5 years



Source: Developed from the research

Perceived Opportunities in Data Analytics Applications

Table 11 lists the means of each perceived opportunity in data analytics applications in audit, while Figure 5 shows the perceived opportunities with the highest mean value to the lowest. The use of DA in audit to 'test a greater number of transactions' has the strongest support when it comes to perceiving opportunities in DA, with an overall mean of 4.09. This is followed by 'useful to auditors in performance of substantive and analytical procedures' and 'increase the quality of audit' with a mean of 4.04 for both instances.

However, 'to reduce cost' is the lowest with a mean of 3.81, showing that auditors do not believe that cost savings can be achieved with the application of DA in audit activities.

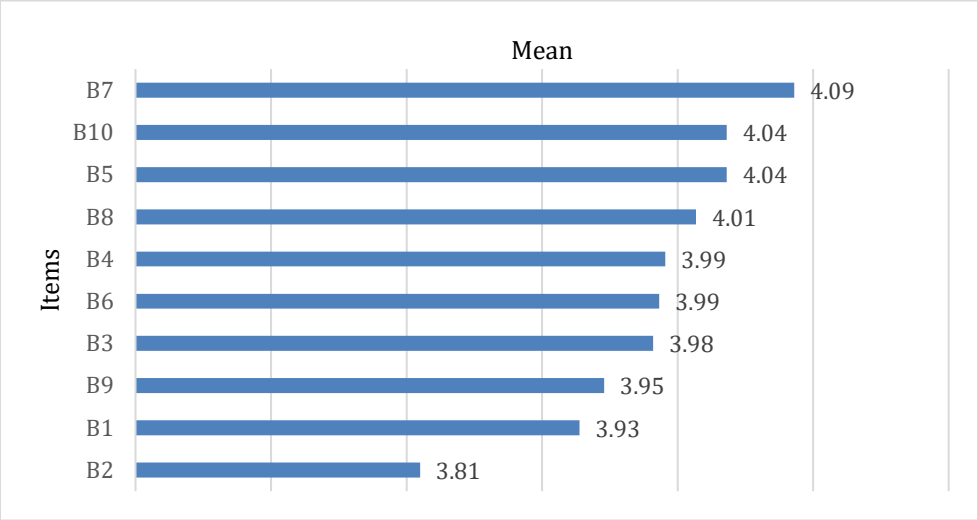
Table 11: Perceived Opportunities in ADA applications

No	Items	Mean	Std. Deviation
B1	Analyse data quickly and on a real-time basis	3.93	0.844
B2	To reduce the cost	3.81	0.853
B3	Better understand the client's business	3.98	0.842
B4	Better identify risk areas/fraud	3.99	0.837
B5	Increase the quality of the audit	4.04	0.819
B6	Presents new opportunities for audit firms to expand their advisory services	3.99	0.866
B7	Test a greater number of transactions	4.09	0.813
B8	Useful to auditors in audit planning	4.01	0.789

B9	Useful to auditors in evidence gathering	3.95	0.813
B10	Useful to auditors in the performance of substantive and analytical procedures	4.04	0.836

Note: *Responses are based on a Likert Scale where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.*
Source: Developed from the research

Figure 5: Perceived Opportunities in DA applications



Source: Developed from the research

Challenges in Data Analytics Applications

The challenges faced by respondents, with the mean of each item, are displayed in Table 12. The findings showed that respondents perceive that clients' concern over data privacy and confidentiality is a top concern, with a mean of 3.81 when it comes to the challenges of applying DA in audit. While 'difficulties in identifying and distinguishing relevant sources of information when using data analytics' is the lowest in terms of challenges with a mean of 3.29.

Table 12: Challenges in DA applications

No	Items	Mean	Std. Deviation
C1	Do not provide sufficient training on data analytics	3.33	1.012
C2	Lack of requisite skills and expertise to apply data analytics techniques in audit activity	3.46	1.015
C3	Difficulties in identifying and distinguishing relevant sources of information when using data analytics	3.29	0.985
C4	Not given sufficient access to the client's data in performing data analytics	3.35	1.037
C5	Clients are concerned about data privacy and confidentiality	3.81	0.939
C6	Standards do not explicitly define the type of analytical approaches that should be undertaken by auditors	3.52	0.851

C7	The government does not provide support for the adoption	3.69	0.851
C8	DA technology is complex to use	3.38	0.869
C9	DA adoption is a complex process	3.42	0.904
C10	Existing firm infrastructure is not compatible with data analytics technology	3.29	0.952
C11	Clients are using systems that are not compatible	3.42	0.924

Note: *Responses are based on a Likert Scale where 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.*
Source: Developed from the research

Discussion

The findings revealed a significant trend in the adoption of audit data analytics (ADA) among audit firms, highlighting both the growing recognition of its benefits and the challenges hindering its implementation. The results indicate that while many firms actively incorporate ADA into their audit processes, the level of adoption varies by audit areas. Key areas such as mapping sales, receivables, and payment processes (A7, A8) show relatively higher adoption rates, suggesting that firms acknowledge ADA's role in improving transactional accuracy and efficiency. However, certain areas, such as tracking inventory movements (A6) and capitalizing labor costs (A14), exhibited lower adoption rates, possibly due to the complexity of data integration in these domains.

Furthermore, the study identified significant perceived benefits of ADA, with increased transaction testing (mean = 4.09) and improved audit quality (mean = 4.04) being the most acknowledged incentives. This aligns with the broader global trend where ADA is increasingly seen as a tool for enhancing audit effectiveness, reducing human error, and improving fraud detection. However, despite these benefits, there remains a gap in adoption readiness. While some firms plan to integrate ADA within the next two to five years, others either lack a concrete plan or deem ADA adoption unnecessary. This variance could be attributed to factors such as firm size, available resources, and the technological readiness of different organizations. Smaller firms, for instance, may struggle with the financial and infrastructural investment required to implement ADA, whereas larger firms with established technological ecosystems may find integration more feasible.

Additionally, the study highlighted several challenges impeding ADA adoption, with client concerns over data privacy (mean = 3.81) and a lack of requisite expertise (mean = 3.46) emerging as major adoption barriers. The reluctance of clients to share data due to confidentiality issues limits auditors' ability to leverage ADA for comprehensive analysis, suggesting a need for enhanced regulatory frameworks to address data security concerns. Moreover, the lack of sufficient training in DA (mean = 3.33) underscores a skills gap in the auditing profession, necessitating targeted capacity-building initiatives. To bridge this gap, universities, professional bodies, and firms must collaborate to integrate ADA training into accounting and auditing curricula, ensuring that future auditors are equipped with the necessary technical expertise.

The findings also suggested that while ADA is recognized as a valuable tool, its adoption is not uniform across the industry. Government support for ADA adoption (mean = 3.69) is another area that requires attention, as regulatory incentives and policy initiatives could accelerate the transition toward data-driven auditing. Additionally, firms need to assess the compatibility of their existing infrastructure with DA technologies to overcome implementation challenges. Given the increasing reliance on data in auditing, firms that fail to embrace ADA risk are falling behind in an industry that is rapidly shifting toward digital transformation. Thus, a multi-stakeholder approach involving regulators, audit firms, and clients is essential to addressing barriers and unlocking the full potential of DA in the audit profession.

5. Conclusion and Recommendations

This study provides valuable insights into the current state of Audit Data Analytics (ADA) adoption among external auditors in Malaysia. The findings highlighted that while ADA is increasingly recognized for its potential to enhance audit quality, efficiency, and scope, particularly in transactional processes like sales, receivables, and payments, its adoption remains inconsistent across different audit areas and firms. The study

emphasized that external auditors perceived significant opportunities in using ADA, especially for increasing the volume of transactions tested and improving audit quality. However, several critical challenges persist, including clients' concerns over data privacy, limited expertise, and inadequate technological infrastructure within firms.

The study contributes to the current body of knowledge by offering empirical evidence specific to Malaysia's auditing landscape, where prior research has been limited. By identifying the key opportunities and barriers perceived by external auditors, this study extends the understanding of how ADA adoption is unfolding in practice and where gaps still exist. Practically, the findings offer regulators, audit firms, and professional bodies insights about the necessary interventions required to support the adoption of ADA. These include enhancing client trust regarding data security, providing specialized training, and encouraging policy support at the national level.

However, this study is not without limitations. First, the sample is restricted to audit firms in Klang Valley, Penang, and Johor, which may not fully represent firms in other Malaysian regions. Second, the study focuses primarily on perceptions rather than actual usage behavior, which may not capture the depth of operational realities faced during ADA implementation.

Future research should address these limitations by expanding the sample to include a broader geographic representation and adopting a longitudinal approach to track the progression of ADA adoption over time. Qualitative methods, such as interviews or case studies, could provide deeper insights into the practical challenges and success stories associated with ADA implementation. Additionally, future studies could explore the role of regulatory frameworks, client-related dynamics, and comparative studies across different countries to offer a more comprehensive understanding of ADA integration in the auditing profession. In conclusion, this study underscores the importance of multi-stakeholder collaboration in overcoming adoption barriers and advancing the application of data analytics in external auditing. By addressing identified challenges, audit firms in Malaysia can better leverage ADA to enhance audit effectiveness and maintain competitiveness in an increasingly digital business environment.

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