FACTORS INFLUENCE THE USAGE OF DATA ANALYTICS IN AUDIT PROCEDURE BY INTERNAL AUDITOR OF CENTRAL BANK IN MALAYSIA

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ABSTRAK

Penggunaan teknologi yang semakin meningkat memberi impak kepada profesion audit dimana lebih ramai juruaudit IT diperlukan dalam organisasi untuk menjalankan prosedur audit dengan bantuan teknologi atau Teknik Audit Berbantukan Komputer (CAAT) seperti analitik data yang dianggap sebagai satu alat yang membantu dalam mempercepatkan kerja juruaudit. Oleh itu, tujuan utama kajian semasa adalah untuk menganalisis korelasi antara jangkaan prestasi, jangkaan usaha, pengaruh sosial, keadaan yang memudahkan dan kemahiran IT yang memberikan kesan ke atas niat untuk menggunakan analitik data, serta menganalisis korelasi antara keadaan yang memudahkan, kemahiran IT dan niat untuk menggunakan analitik data ke atas penggunaan analitik data yang sebenar. Pembolehubah yang digunakan dalam kajian ini diguna pakai daripada Teori Penerimaan dan Penggunaan Teknologi Bersepadu (UTAUT) dan Teori Kompetensi IT. Data dikumpul dalam bentuk tinjauan dalam talian daripada 72 juruaudit dalaman di jabatan audit dalaman bank pusat di Malaysia, dan analisis data dijalankan menggunakan SmartPLS. Dapatan kajian menunjukkan bahawa jangkaan prestasi, pengaruh sosial dan keadaan yang memudahkan mempunyai pengaruh signifikan yang positif terhadap niat juruaudit dalaman untuk menggunakan analitik data, namun jangkaan usaha tidak mempunyai pengaruh yang signifikan terhadap niat untuk menggunakan analitik data. Sementara itu, kemahiran IT dan niat untuk menggunakan mempunyai pengaruh signifikan yang positif terhadap penggunaan sebenar analitik data oleh juruaudit dalaman di bank pusat. Kajian ini menyumbang kepada implikasi teori dan praktikal di mana UTAUT dan teori Kompetensi IT terbukti, dan pembaca boleh mendapatkan pandangan tentang persepsi juruaudit dalaman di bank pusat terhadap analitik data dalam menjalankan prosedur audit. Kajian masa depan boleh mengembangkan kajian dengan mengumpul data daripada institusi kewangan lain di Malaysia.

Kata Kunci: Audit IT, analitik data, penggunaan teknologi juruaudit dalaman, bank pusat Malaysia, CAAT

ABSTRACT

The emerging use of technology give an impact to audit profession in a way that more IT auditors are needed in the organization to conduct audit procedure with the help of technology or Computer Assisted Audit Techniques (CAATs) like data analytics as it deemed to be as helpful tool in expediting the work of auditors. Therefore, current study analyzed the correlation between performance expectancy, effort expectancy, social influence, facilitating conditions and IT skills on intention to use data analytics, as well as analyzing the correlation between facilitating conditions, IT skills and intention to use on actual usage of data analytics. The variables used in this study was adopted from Unified Theory of Acceptance and Use of Technology (UTAUT) and IT Competency theory. Data was collected in the form of online survey from 72 internal auditors in the internal audit department of central bank in Malaysia, and the analysis of data was conducted using SmartPLS. The findings of the study suggest that performance expectancy, social influence and facilitating conditions have a positive significant influence on internal auditor's intention to use data analytics, however effort expectancy has no significant influence on intention to use. Meanwhile, IT skills and intention to use have positive significant influence on the actual usage of data analytics by central bank's internal auditors. This study contributed to both theoretical and practical implications where UTAUT and IT competency theory are proven, and reader can gain insights on the perception of central bank's internal auditors on data analytics in conducting audit procedure. Future research can expand the study by collecting data from other financial institutions in Malaysia.

Keywords: IT audit, data analytics, internal auditor's technology usage, Malaysia's central bank, CAATs

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LIST OF ABBREVIATIONS

ACCA	Association of Certified Chartered Accountant
ACL	Audit Command Language
AI	Artificial intelligence
AIS	Accounting information system
BDA	Big Data Analytics
CAATs	Computer Assisted Audit Techniques
CISA	Certified Information System Auditor
CMA	Certified Management Accountant
COVID-19	Corona virus disease 2019
CPA	Certified Public Accountant
EAM	Enterprise asset management
EE	Effort expectancy
FC	Facilitating conditions
GAS	Generalized Audit Software
IAU	Internal Audit Unit
IDEA	International Data Encryption Algorithm
IIA	Institute of Internal Auditors
IS	Information system
IT	Information technology
ITC	Information technology competency
IU	Intention to use
KPMG	Klynveld Peat Marwick Goerdeler
MIA	Malaysia Institute of Accountants

PE	Performance expectancy
PLC	Public listed companies
SI	Social influence
SQL	Structured query language
UB	Use behavior
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER 1: INTRODUCTION

1.1 Background

In today's digital era, the proliferation of Information Technology (IT) has transformed numerous sectors, including business and finance. The rapid advancement of Artificial Intelligence (AI) has been a game-changer, particularly in data processing, enabling the efficient handling of large and complex datasets, including unstructured text and images (Dwivedi et al., 2023). This technological evolution has significantly influenced business operations, with many companies migrating to online platforms, thus expanding their market reach globally (Asniarti & Muda, 2019).

These technological changes had also been embraced by the financial sector has also embraced. IT innovations have led to the development of more user-friendly digital solutions, enhancing customer service and operational efficiency (Rjoub et al., 2023). The COVID-19 pandemic accelerated this shift towards digital transactions, as movement restrictions increased reliance on mobile payment methods, leading to a surge in online financial transactions (Singh & Sharma, 2022).

The auditing industry will be greatly impacted by this rise in digital financial activity. Due to the restrictions implemented during the pandemic, it has provide some disruptions on the traditional way of auditing which is going on-site to conduct audit procedure. This increases the necessity to shift towards more technologically advanced auditing methods. In this context, Computer Assisted Audit Techniques (CAATs), and specifically data analytics, have gained prominence in the auditing process. Data analytics in auditing allows for the examination of

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Appendix 1: Questionnaire Survey

Factors Influence the Usage of Data Analytics in Audit Procedure by Internal Auditor

Greetings, I am Hannan Zamilah Binti Hamdi, a final year student taking Master of Science (International Accounting) in Universiti Utara Malaysia (UUM). The purpose of this questionnaire is to analyse the factors that influence the usage of data analytics which is part of Computer Assisted Audit Techniques (CAATs) by internal auditors. CAATs is a software that helps the auditors to carry out the audit process and procedures by using the computers, and data analytics enables the auditor to analyse huge amount of data and draw the conclusions to make suitable business decisions.

There are 18 main questions in this questionnaire, divided into three sections (Part A, Part B and Part C). The data that is being collected for this questionnaire is strictly being used for educational purposes. Appreciate if you could take a few minutes of your time to answer all the questions, and this will be helpful for data collection in order to complete my research. Thank you in advance.

Part A: Demographic Questions

1. Age

	Please tick (/)
20 – 25	
26 – 30	
31 – 35	
36 – 40	

41 and older	

2. Gender

	Please tick (/)
Male	
Female	

3. Education Level

	Please tick (/)
Diploma	
Bachelor's Degree	
Master's Degree	
Doctorate	

4. Do you have professional qualification?

	Please tick (/)
Yes	
No	

5. If your answer is "Yes", please indicate it: (You may tick one or more boxes if appropriate).

	Please tick (/)
ACCA	
CMA	

CISA	
CPA	
Others	

6. Please tick your years' experience in auditing.

	Please tick (/)
1 – 5	
6 – 10	
11 – 20	
21 – 30	
More than 30 years	

7. Please tick your years' experience in system auditing.

	Please tick (/)
1 – 5	
6 – 10	
11 – 20	
21 – 30	
More than 30 years	

8. Please indicate your knowledge on the following (You may tick one or more boxes if appropriate).

	Please tick (/)
Blockchain	
Cloud Computing	

Big Data	
Fintech	
Crypto Currency	

9. Type of audit software used.

	Please tick (/)
Audit Command Language (ACL)	
International Data Encryption Algorithm (IDEA)	
Big Data	
Fintech	
Crypto Currency	

Part B: Factors Influence the Usage of Data Analytics in Audit Procedure

The scale of answers for question are as follows:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

10. **Performance Expectancy =** The degree or level where an individual believes that by using the technology or tools will help them to have improvement in their performance.

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1.	Data analytics reduce the time to do my audit work.					
2.	Data analytics help to increase my productivity.					

3.	Data analytics help to improve audit quality					
4.	I think data analytics is useful in my work.					

11. **Effort Expectancy** = The easiness level when using the technology and the individual will think that using it will be effortless.

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1.	Data analytics is easy for me to understand.					
2.	I can use data analytics easily.					
3.	It is easy for me to maintain my skills to use data analytics.					
4.	I find it easy to learn to use data analytics.					

12. **Social Influence** = The extent an individual view that the superiors or relatives think that they should utilize the system.

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)

1.	Colleagues inspires me to use data analytics.					
2.	Colleagues believes that I can use data analytics.					
3.	The superiors are using data analytics together.					
4.	Huge support from the company to use data analytics.					

13. **Facilitating Conditions** = The believe of an individual that there are enough resources and technical infrastructure available to support the utilization of system.

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1.	There are adequate resources for me to use data analytics.					
2.	There are experts that can help me to use data analytics.					
3.	My knowledge on IT is adequate for me to learn data analytics easily.					

14. **Intention to Use**

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1.	I will use data analytics for a very long time.					
2.	I have intention to use data analytics in the future.					
3.	I predict that I would use data analytics in the future.					

Use Behaviour

		Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
15.	You use data analytics often.					
		1 time	2 times	3 times	4 times	More than 5 times
16.	How many times do you use data analytics in your					

	work during a week, overall?					
		1 – 2 hours	3 – 4 hours	5 -6 hours	7 – 8 hours	More than 8 hours
17.	How many hours do you use data analytics in your work during a week, overall?					

Part C: IT Skills

18. Please indicate the extent your proficiency with the statements below by tick (√) in the appropriate box of the scale.

		Very Low (1)	Low (2)	Average (3)	Good (4)	Excellent (5)
1.	**Generalized Audit Software (GAS):** Software that facilitates the auditor's access to client computer data files, allows them to extract pertinent data, and carries out audit tasks for					

	example like addition and comparison. [e.g. Audit Command Language (ACL)].					
2.	**Firewall software / hardware:** A component of "security technology" that keeps two networks' access control policies in place.					
3.	**Digital communications:** Devices used in bandwidth-telecommunications that enable the quick and unrestricted flow of data (e.g. video conferencing).					
4.	**Database search and retrieval:** Software that allows for different data retrieval and use by utilizing relational structures between data files (e.g. Microsoft Access).					

5.	**Expert systems:** Software for computers that helps people make decisions or complete tasks by offering pertinent data and/or decision models.					