Pusat Pengajian Perakaunan Tunku Puteri Intan Safinaz

TUNKU PUTERI INTAN SAFINAZ SCHOOL OF ACCOUNTANCY

Universiti Utara Malaysia

PROCEEDINGS OF THE

INTERNATIONAL POSTGRADUATE SYMPOSIUM ON ACCOUNTING STUDIES (IPSAS) 2025

Shaping the Future of Accounting: Research, Reform, and Responsibility

IPSAS

INTERNATIONAL POSTGRADUATE SYMPOSIUM ON ACCOUNTING STUDIES

2025

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Proceedings of the International Postgraduate Symposium on Accounting Studies (IPSAS) 2025

"Shaping the Future of Accounting: Research, Reform, and Responsibility"

Editors:

Hasnah Shaari

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Proceedings of the International Postgraduate Symposium on Accounting Studies (IPSAS) 2025

First Edition 2025

Published by:
Pusat Pengajian Perakaunan Tunku Puteri Intan Safinaz (TISSA-UUM)
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Malaysia
Tel: 04-928 7201 Fax: 04-928 7200
E-mail: ipsas@uum.edu.my
Website: tissa.uum.edu.my
2025

e ISBN 978-629-94430-1-8

9 786299 443018

ACKNOWLEDGEMENT

Heartfelt gratitude and appreciation the Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM) to all those involved direct or indirectly in the success of International Postgraduate Symposium on Accounting Studies (IPSAS) 2025

Background of IPSAS 2025

The International Postgraduate Symposium of Accounting Studies (IPSAS) 2025, themed *"Shaping the Future of Accounting: Research, Reform, and Responsibility,"* brings together diverse inquiries that reflect the transformative landscape of accounting scholarship and practice. The proceedings encompass studies spanning governance, sustainability, education, and digital transformation.

Several papers critically examine governance mechanisms and sustainability disclosure, particularly within Malaysian industries, highlighting how board attributes, integrated reporting, and climate risk governance influence accountability and performance. Complementing these, research on SMEs and zakat institutions underscores policy responsiveness, digital innovation, and ethical stewardship in advancing socio-economic resilience.

Educational reform emerges as a vital thread as papers on service learning, technology integration, AI adoption, and micro credentials demonstrate a growing commitment to equipping future accountants with critical, digital, and ethical competencies. Studies addressing employee voice, anti-fraud mechanisms, and entrepreneurial resilience further broaden the discussion on organizational integrity and human capital development.

Collectively, these contributions embody the conference's triad of research, reform, and responsibility, signalling a profession that is not only data driven and digitally adaptive but also grounded in social purpose and sustainability. IPSAS 2025 thus positions accounting as a pivotal force in shaping equitable, transparent, and future ready institutions.

Theme

"Shaping the Future of Accounting: Research, Reform, and Responsibilities

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Exploring SMEs' Intention to Participate in the Special Voluntary Disclosure Programme 2.0: Insights from the Northern Region

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Abstract

Compliance with tax regulations among small and medium-sized enterprises (SMEs) in Malaysia has long been a challenge. It can be indicated by the low submission rate of income tax return forms (ITRF). Although the Special Voluntary Disclosure Programme (SVDP) 1.0 was launched earlier, SMEs continue to face challenges with complex tax issues, limited accounting resources, and a lack of awareness of regulatory requirements. This study aims to address this gap by examining the factors that influence SMEs' intention to participate in SVDP 2.0 using the Theory of Planned Behavior (TPB) model. The study has two main objectives: (i) to determine the levels of attitude, subjective norms, tax knowledge, enforcement of penalty, and willingness to participate among SME owners in the Northern region regarding SVDP; and (ii) to determine the relationships among these factors. Quantitative methods were employed to achieve these objectives. An online questionnaire, distributed via Google Forms, was sent to SME owners in Perlis, Kedah, Pulau Pinang, and Perak via email. A total of 276 responses were collected and analyzed with SPSS software version 29. The findings reveal a strong inclination among SME owners in the northern region to participate in the SVDP to ensure tax compliance. It is supported that attitude, subjective norm, tax knowledge, and enforcement of penalties are significantly related to the intention to participate in SVDP among SMEs in the northern region. This highlights the need for tailored policies and support mechanisms to enhance engagement and compliance. This research contributes to the theoretical field by filling research gaps and proposing practical strategies. Implementing these strategies can foster a more supportive environment for SMEs to participate in voluntary disclosure programs, benefiting businesses and the tax system by encouraging compliance and driving economic growth.

Keywords
Intention, Attitude, Subjective Norms, Tax Knowledge, Enforcement of Penalty

1. INTRODUCTION

Taxation refers to a compulsory financial levy imposed by a government on its subjects (Tax Foundation, 2024). These funds are important for financing national expenditures such as providing public facilities and redistributing wealth, shaping economic activity, and controlling inflation. Tax policies differ across countries and often spark discussions and disagreements.

In Malaysia, the Inland Revenue Board of Malaysia (IRBM) has been consistently enhancing its service framework by transitioning from a formal assessment system to a self-assessment system (STS) since the assessment years 2001 for companies and 2004 for non-company taxpayers, including individuals. This shift aims to bolster tax compliance rates. As part of this effort, IRBM has introduced e-Filing and *ByrHasil* systems to streamline taxpayers' activities in income declaration and payments (Bernama, 2017). Taxpayers can declare income and compute tax liabilities without the need to submit receipts or supporting documents upfront via e-Filing. These documents are only required to be sent to IRBM via email if requested during the tax audit process. Nevertheless, despite these measures, some parties persist in attempting to evade or circumvent their tax obligations (Saad, 2012). Despite the ease in the tax process, tax non-compliance is still a major problem for tax authorities in many countries, including Malaysia.

Tax compliance refers to the degree to which taxpayers fulfill their tax obligations, which include filing returns on time, accurately reporting income, paying the taxes owed, and adhering to relevant tax laws and regulations. In Malaysia, as in many countries, achieving high levels of tax compliance is crucial for generating revenue, ensuring fairness, and promoting good governance. The Inland Revenue Board of Malaysia (IRBM) has identified significant amounts of unpaid taxes. For instance, between January 1, 2024, and August 31, 2025, the IRBM discovered additional tax liabilities totaling approximately RM15.2 billion from companies and about RM1.75 billion from individuals, amounting to a combined total of around RM16.95 billion, including penalties (Bernama, 2025). To address the issue of non-compliance, the IRBM is encouraging voluntary disclosures, which can help reduce penalties compared to audits and investigations.

The Malaysian Ministry of Finance (MoF) introduced the Special Voluntary Disclosure Programme (SVDP) to enhance tax compliance among Malaysians, assigning the IRBM to oversee its implementation. Originally introduced as SVDP 1.0 subsequent to the unveiling of the 2019 Budget on November 2, 2018, it operated from November 3, 2018, until September 30, 2019 (Sinar Harian, 2024). During this period, the program facilitated the collection of RM7.88 billion in total taxes, additional taxes, and penalties from 286,428 taxpayers (Berita Harian, 2020). Additionally, SVDP 1.0 attracted 11,176 new taxpayers with a huge amount of assessment from various activities, i.e., income tax return form, audit, investigation, special operation, special action, income tax, real property gain tax, as well as stamp duty.

Considering the success of SVDP 1.0 in 2019, SVDP 2.0 was launched from June 6, 2023 to May 31, 2024. The primary aim of SVDP 2.0 was to encourage more taxpayers to come forward and rectify any tax discrepancies without facing penalties. The ultimate goal was to enhance tax compliance and bolster revenue collection. By January 31, 2024, IRBM had received a total of 64,748 voluntary declaration cases from both new and existing taxpayers in all categories (KPMG, 2023).

Initiatives such as the SVDP have shown promise of increasing compliance rates. However, this paper focuses on SMEs as it is claimed that regulatory and administrative burdens on SMEs (Business Today, 2024). This is mainly due to SMEs often lacking the resources (financial, human, technical) to meet tax compliance obligations. It is claimed that due to limitations of hiring in-house tax experts, and external agents cost money (Business Today, 2024). In addition to the high cost of compliance in terms of time and effort for smaller businesses, simplification is often recommended to this group (Aziz, Bidin, & Marimuthu, 2017).

Specifically, this paper tries to solve two main research problems. Hence, the questions raise in this paper are: (i) what is the level of attitude, subjective norms, tax knowledge, enforcement of penalty, and intention to participate in SVDP among SME owners in the northern region? and (ii) what are the relationships between attitude, subjective norms, tax knowledge, enforcement of penalty and intention to participate in SVDP among SMESs owner in the northern region?

2. LITERATURE REVIEW

The literature review aims to explore the diverse elements affecting SME owners' inclination to engage in the SVDP within the northern region. These factors include attitudes, subjective norms, tax knowledge, and enforcement of penalties, all of which can impact participation rates. By analyzing each factor separately, a deeper comprehension of how they collectively impact participation intention can be achieved.

2.1 Small and Medium-Sized Enterprises (SMEs)

SME status applies to entities established in Malaysia under the Companies Act 2016, registered under the Business Registration Act (1956) or the Limited Liability Partnership Act (2012), registered with authorities in Sabah and Sarawak, or registered under specific statutory bodies for professional service providers below RM25 million or a workforce of fewer than 150 full-time employees. IRBM categorizes SMEs as follows (refer Table 1):

Table 1
SMEs Categories

Categories	Micro	Small	Medium
Factory	Revenue under RM300,000 or a staff count of 5 or fewer.	Revenue ranging from RM300,000 to RM15 million, or a workforce comprising 5 to 75 full-time employees.	Revenue ranging from RM15 million to RM50 million or a workforce consisting of 75 to 200 full-time employees.
Services and other sector	Revenue under RM300,000 or a staff count of 5 or fewer.	Generate revenue ranging from RM300,000 to RM3 million or employ a workforce of 5 to 30 individuals.	Revenue ranging from RM3 million to RM20 million or a workforce of 30 to 75 full-time employees.

Source: IRBM (2024)

2.2 Special Voluntary Disclosure Programme in Malaysia (SVDP)

Special Voluntary Disclosure Programme (SVDP) is a tax amnesty programme that encourages taxpayers to declare unreported income voluntarily and pay the relevant taxes. The programme has been implemented in various countries worldwide, including Malaysia, Indonesia, and Singapore, to increase state budget revenues and streamline development programmes.

The SVDP is the third programme implemented in Malaysia after the tax amnesty programme that was implemented in 2015 and 2016. It is part of a series of initiatives aimed at improving tax compliance. All three programmes share the same objective of incentivizing taxpayers to declare their income (LHDNM, 2018). Similar to 2015 and 2016, this SVDP is an effort to increase government revenue by encouraging greater participation and transparency in tax reporting.

During the 2023 revised Budget presented on 24 February 2023, the Special Voluntary Disclosure Programme (SVDP) or SVDP 2.0 was reintroduced (Soh, 2023). SVDP 2.0 aims to bolster tax compliance and expand the nation's tax base. Running from June 6, 2023, to May 31, 2024, this initiative offers taxpayers a golden chance to rectify their tax affairs and begin afresh. Taxpayers who voluntarily disclose unreported taxes will be eligible for a complete penalty waiver.

3. METHODOLOGY

This study aims to uncover the factors influencing the willingness of SME owners in the northern region to participate in the SVDP. It employs quantitative methodology to collect empirical data. Data is collected based on responses from respondents to a questionnaire. A structured survey was employed to gather information from entrepreneurs of SMEs located in the northern areas encompassing Perlis, Kedah, Penang, and Perak. This approach aimed to assess the variables under investigation and validate the hypotheses formulated in this study.

3.1 Sample

The study concentrates on owners of SMEs in the northern region encompassing Perlis, Kedah, Pulau Pinang, and Perak states. Participants were chosen at random due to the substantial population size. Based on data provided by the Companies Commission of Malaysia through Corporate and Business Information Data (CBID), the number of businesses and companies in the northern region is 484,749.

A total of 276 sample sizes were selected to ensure sufficient representation of the sample of SME owners in the northern region. According to a study by Kadam and Bhalerao (2010), a sample size of at least 30 is necessary to achieve a normal distribution, which is essential for many statistical analyses, while Sekaran (2016) states that the appropriate sample size range is between 30 to 500. Therefore, a total of 276 samples were considered acceptable for this research.

This study employs a random probability sampling approach, wherein respondents are selected randomly from Perlis, Kedah, Pulau Pinang, and Perak, all of which are business-active states. The survey was disseminated via email to the Malay Chamber of Commerce, the Chinese Chamber of Commerce, and the Indian Chamber of Commerce within these states. Additionally, the questionnaire was shared online with connections engaged in business within the aforementioned regions.

4. FINDINGS

4.1 Demography of Respondents

In total of the 276 respondents, 170 were identified as male, representing 61.6%. Conversely, 106 participants were identified as female, constituting 38.4%. In terms of racial distribution, the majority, comprising 42.8% (n = 118) of the sample, identified as Malay. Indian individuals accounted for 40.2% (n = 111), making them the second-largest group. Chinese respondents constituted 15.2% (n = 42) of the population. Lastly, those categorized as "Others" represented a smaller proportion, comprising only 1.8% (n = 5) of the total sample.

The breakdown of respondents' profiles by state indicates that 4.0% of respondents (n = 11) are from Perlis, 31.2% (n = 86) from Kedah, 21.7% (n = 60) from Pulau Pinang, and 43.1% (n = 119) from Perak. The survey data reveal that the majority of respondents, comprising 37.0% (n = 102), fell within the age range of 30 to 40 years old. Following closely behind, 33.3% (n = 92) of participants were aged between 41 and 50 years. Additionally, 26.1% (n = 72) of respondents were younger than 30 years old. Lastly, a smaller proportion, accounting for 3.6% (n = 10) of participants, were older than 50 years.

The respondents' profile, categorized by business type (refer Figure 2), indicates that 195 individuals (70.7%) are employed in manufacturing, while the remaining 81 (29.3%) work across services and other sectors. The category of respondents is based on the size of their businesses. The majority, constituting 61.2% (n = 169), were classified as micro-enterprises, defined by a turnover of less than RM300,000 and fewer than 5 employees. Small manufacturing entities accounted for 18.1% (n = 50) of the respondents, while 17.0% (n = 47) represented small services and other sectors, characterized by a turnover ranging from RM300,000 to RM3 million and an employee count of 5 to 30 people. Additionally, 1.1% (n = 3) fell into the category of medium manufacturing, with turnovers between RM15 million and RM50 million, employing 75 to 200 people. Finally, 2.6% (n = 7) were classified as medium services and other sectors, with turnovers ranging from RM3 million to RM20 million and employing 30 to 75 individuals.

4.2 Descriptive Analysis

The results of this study are to answer the first objective and research question, which is to determine the level of attitude, subjective norms, tax knowledge, enforcement of penalty, and intention to participate among SME owners in the northern region in the SVDP (refer Table 2).

Table 2
Descriptive Analysis (n=276)

Variable	Mean	Std Dev
Intention to Participate	4.31	0.286
Attitude	4.11	0.358
Subjective Norm	4.20	0.513
Tax Knowledge	4.12	0.422
Enforcement of Penalty	4.18	0.516

Notes: Low level = 1.00 – 2.33, Moderate level = 2.34 – 3.66, High level = 3.67 – 5.00

Overall, the intention to participate among SME owners in the northern region in the SVDP is measured by eight (8) items. The score of intention to participate (M = 4.31, SD = 0.286) among SME owners in the northern region in the SVDP is at a high level. The attitude among SME owners in the northern region towards the SVDP is measured by seven (7) items. Overall, the score of attitudes (M = 4.11, SD = 0.358) among SME owners in the northern region in relation to the SVDP is at a high level. The subjective norm among SME owners in the northern region with regard to the SVDP is measured by four (4) items. Overall, the score of subjective norms (M = 4.20, SD = 0.513) among SME owners in the northern region in relation to the SVDP is at a high level. In respect to the tax knowledge among SME owners in the northern region, the SVDP is measured by six (6) items. Overall, the score of tax knowledge (M = 4.12, SD = 0.422) among SME owners in the northern region in the SVDP is at a high level. The enforcement of penalties among SME owners in the northern region towards the SVDP is measured by seven (7) items. Overall, the score of enforcement (M = 4.18, SD = 0.516) among SME owners in the northern region in relation to the SVDP is at a high level.

The data indicate that small and medium-sized enterprise (SME) owners in the northern region generally have a positive and proactive attitude towards tax compliance and participation in voluntary disclosure programs, such as the SVDP. The combination of a strong positive attitude, supportive subjective norms, adequate tax knowledge, perceptions of enforcement, and a willingness to participate suggests a significant inclination among these SME owners to engage transparently and compliantly with tax authorities. This ultimately benefits both the SMEs and the overall tax ecosystem.

4.3 Multiple Regression

The results of this study are to answer the second objective and research question, which is to determine the relationships between attitude, subjective norms, tax knowledge, enforcement of penalty, and intention to participate among small and medium-sized enterprises (SMEs) owners in the northern region in the SVDP.

Multiple linear regression analysis was carried out with four (4) factors as important predictive variables, i.e., attitude, subjective norm, tax knowledge, and enforcement of penalty. The results showed that the prediction model for intention to participate was significant [F (4, 271) = 145.924, $p < 0.05$], and the R-square of this model was 0.683, which means this model explained 68.3% of the variance of intention to participate (refer Table 3).

The outcomes show a significant relationship between attitude and intention to participate, ß = 0.201, *t* (271) = 5.054, $p < 0.01$. There is also a significant relationship between subjective norm and intention to participate, ß = 0.408, *t* (271) = 8.758, $p < 0.01$. There is a significant relationship between tax knowledge and intention to participate, ß = 0.390, *t* (271) = 10.892, $p < 0.01$. There is a significant relationship too between enforcement of penalty and intention to participate, ß = 0.137, *t* (271) = 3.210, $p < 0.01$. Based on the results, the four (4) hypotheses proposed for this paper are accepted and supported. Among the beta values, subjective norm is the highest (0.408), which indicates it is the most important factor that influences the intention to participate. This is followed by tax knowledge (0.390), attitude (0.201), and lastly, enforcement of penalty (0.137).

Table 3
Multiple Regression Analysis (n=276)

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig. P**
		B	Std. Error	Beta		
1	(Constant)	1.288	.138		9.297	.000
	Attitude	.160	.032	.201	5.054	.000
	Subjective norm	.227	.026	.408	8.758	.000
	Tax knowledge	.264	.024	.390	10.892	.000
	Enforcement of penalties	.076	.024	.137	3.210	.001
a. Dependent Variable: Intention to participate						
R-square = 0.683, F (4, 271) = 145.924, Sig. F = 0.000						

The results of the multiple regression analysis provide valuable insights into the relationships between various factors and the intention to participate among SME owners in the northern region regarding the SVDP (presumably, referring to a specific tax or economic development programme). Firstly, the significant relationships between attitude, subjective norms, tax knowledge, enforcement of penalty, and intention to participate underscore the complexity of factors influencing SME owners' decision-making regarding participation in the program.

The finding that subjective norm has the highest beta value (0.408), indicating its significant influence on intention to participate, suggests that social influences and perceptions of what others expect play a pivotal role in SME owners' decision-making. The substantial impact of tax knowledge (beta value of 0.390) highlights the importance of SME owners' understanding of taxation policies and procedures in shaping their intention to participate. Furthermore, the positive relationship between attitude and intention to participate (beta value of 0.201) indicates that SME owners' favorable perceptions or beliefs about the program contribute to their willingness to engage with it. Lastly, the significant relationship between enforcement of penalty and intention to participate (beta value of 0.137) suggests that while enforcement measures may exert some influence on SME owners' decisions, its impact is relatively weaker compared to other factors such as subjective norms and tax knowledge.

In conclusion, the findings underscore the multifaceted nature of factors influencing SME owners' intention to participate in the programme, with subjective norms, tax knowledge, and attitudes playing prominent roles. Addressing these factors through targeted interventions and educational initiatives can potentially enhance SME participation and contribute to the success of the programme.

5. CONCLUSION

In conclusion, the paper offers valuable insights into the factors influencing SME owners' intentions to participate in voluntary disclosure programmes like the SVDP in the northern region of Malaysia. By applying the TPB framework and incorporating additional factors within PBC, the paper provides empirical evidence of the complex interactions between attitudes, subjective norms, tax knowledge, enforcement of penalties, and intention to participate.

Future research should focus on longitudinal studies, contextual analyses, comparative assessments, qualitative investigations, cross-cultural comparisons, communication strategy evaluations, policy impact assessments, and stakeholder engagement studies. Exploring this research will deepen the understanding of SME owners' behavioural intentions and contribute to the development of more targeted and effective interventions that promote tax compliance and economic development.

Overall, the paper contributes to both theoretical advancements in understanding tax compliance behaviour and practical initiatives aimed at encouraging voluntary participation among SMEs. By addressing the identified research gaps and implementing the recommended strategies, stakeholders can create a more supportive environment that fosters SME engagement with voluntary disclosure programmes, ultimately benefiting both businesses and the broader tax ecosystem.

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Paper ID: 02

Technology Integration in Tax Accounting Education: Assessing Preparedness Towards Digitalisation

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Abstract

The integration of technology in taxation education has become increasingly important to ensure that graduates are equipped with industry-relevant skills in line with the demands of the digital economy. However, challenges remain in terms of students' preparedness to adopt digital tools effectively. This study explores the integration of Superior Taxcom software into the teaching and learning of taxation within the Advanced Taxation course at Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM). A classroom-based qualitative approach grounded in service-learning was employed, involving students across three teaching groups. Data was collected through interviews and classroom observations and analysed thematically. The findings reveal that students enhanced problem-solving and critical thinking skills through hands-on application, although they also faced challenges related to software familiarity and time constraints. The study contributes to literature by providing empirical insights into technology-enhanced taxation education. It also underscores the importance of pedagogical innovation in advancing Sustainable Development Goal 4 (SDG 4) on quality education.

Keywords
Technology Integration, Tax Accounting Education, Student Preparedness, SDG 4

1. INTRODUCTION

High-technology skills are increasingly in demand in Malaysia, as highlighted by government agencies such as the Malaysia Digital Economy Corporation (MDEC). The launch of the Malaysia Digital Economy Blueprint (MyDIGITAL) in 2021 set ambitious targets to accelerate digitalisation, strengthen infrastructure and create a secure digital ecosystem, including the development of 20,000 cybersecurity specialists and 30,000 data professionals by 2025. These initiatives underscore the urgent need for universities to equip graduates with digital competencies relevant to the evolving job market.

Despite these national efforts, studies reveal persistent gaps in digital readiness. PricewaterhouseCoopers (PwC) reported in 2021 that only 19% of Malaysian respondents possessed sufficient digital skills for their jobs. By 2023, while 57% of respondents indicated they had developed some level of digital competency, only 46% reported further improvement and 11% acquired skills primarily through on-the-job learning. These findings signal that higher education institutions must reassess their strategies to better prepare students for technology-driven professions.

Accounting education, in particular, faces significant disruption. Traditional roles centred on numerical accuracy and reporting are being transformed by digital technologies such as automated financial systems, cloud accounting, artificial intelligence (AI) and blockchain (Hay, Helliar, & Kenyon, 2018). Modern accountants are now expected to engage in data analytics, navigate complex financial platforms and provide strategic insights (Deutsch & Carver, 2019). This transformation requires accounting education to integrate digital tools in ways that not only transfer knowledge but also build applied competencies.

At the Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM), proactive steps have been taken to align with these demands by embedding digital tools into the curriculum. Courses such as Principles of Taxation and Advanced Taxation incorporate software such as Superior TaxCom and Microsoft Excel, enabling students to perform tax computations for individuals and businesses. This hands-on approach mirrors real-world practices and fosters adaptability, critical thinking and lifelong learning skills. The integration of such software also reflects the school's commitment to Sustainable Development Goal 4 (SDG 4), which advocates inclusive, equitable and quality education to prepare students for professional success.

Nevertheless, little empirical research has been conducted to evaluate the impact of these initiatives on students' readiness for digitalisation, particularly in taxation education. While technology adoption in accounting has been widely discussed (Munter & Clements, 2018), there remains a gap in understanding how students perceive these integrations and how faculty readiness contributes to effective delivery. Addressing this gap is essential for aligning curricula with industry expectations and for ensuring that graduates are prepared for an increasingly digitalised profession.

Accordingly, this study investigates tax accounting students' perceptions of technology integration in their education. Specifically, it seeks to explore students' perceptions of technology integration and their self-assessed technological competencies. By investigating this dimension, this study contributes to the discourse on accounting education reform and offers practical recommendations for institutions seeking to strengthen digital readiness. The findings provide guidance for policymakers, educators and curriculum designers in enhancing inclusive and high-quality education in line with SDG 4, ultimately preparing graduates for the digital demands of the accounting profession.

2. LITERATURE REVIEW

2.1 Technology Integration in Accounting Education

Accounting rules and principles have been established for many years, and they do not change over time. On the other hand, accounting industry is evolving and it changes. Development of technology and digitalization requires updates and changes of accounting profession. The integration of technology into accounting education has gained prominence as a response to the digital transformation of the accounting profession. Hay, Helliar and Kenyon (2018) emphasize the need for a curriculum framework that prepares accountants for the Fourth Industrial Revolution. Their research outlines the importance of integrating technology-related coursework to equip students with the necessary digital skills.

Similarly, Clements and Munter (2018) present evidence from a longitudinal study highlighting the positive impact of technology-enhanced learning objectives on accounting education. The journey toward nurturing digital skills in accounting education is not without its challenges. Mohamed Zainal, Sapiei, and Zakaria (2018) present a multi-stakeholder perspective on the digital skills required in accounting education. Their research identifies challenges faced by universities, including resource constraints and the need for comprehensive faculty development.

2.2 Students' Perceptions and Preparedness

Understanding students' perspectives and their self-assessed technological competencies is crucial in evaluating the effectiveness of technology integration efforts. Fauziah Sh. Ahmad, Noor Azizi Ismail and

Ee-Heng Moh (2015) conducted a comparative study of Malaysian and Australian students' perceptions of e-learning in accounting education, providing insights into students' views on technology integration. Such studies help gauge students' preparedness for the digital demands of the accounting profession upon graduation. White and Lord (2021) explores the digital skills of accounting graduates and their employability in the workforce, highlighting the increasing importance of these skills for successful career prospects. Chitambara, Smith and Muthaly (2019) emphasize the importance of digital skills in preparing accounting graduates for the future, proposing strategies for integrating these skills into education. To be able to anticipate the Industrial Revolution 4.0, future accountants need to see the potential changes in the short and long term (Malau, 2021).

3. METHODOLOGY

This study employed a classroom-based qualitative approach to investigate the integration of technology in taxation education. The research was conducted in the Advanced Taxation course at Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM) during Semester 2, 2023/2024. The intervention centred on the use of Superior Taxcom software as a learning tool, designed to assess both faculty readiness and student preparedness in adopting technology within the teaching and learning of taxation. The overarching aim was to understand how this pedagogical approach fosters students’ problem-solving and critical thinking skills, while also providing insights into the faculty’s role in facilitating digital adoption.

The participants comprised students enrolled in three teaching groups of the Advanced Taxation course, each consisting of approximately 40–45 students. Within each teaching group, students were organized into smaller teams of five to six members, resulting in eight to nine groups per class. Each group was assigned a company profile and financial information and tasked with preparing capital allowance schedules, statutory business income, chargeable income and tax liability using Superior Taxcom. This collaborative exercise simulated real-world tax computations and provided opportunities for students to experience hands-on application of technology in taxation.

Data collection proceeded in three stages. First, prior to the intervention, open-ended interviews were conducted with student leaders to capture their preparedness, expectations and prior experiences with technology integration. During the implementation phase, classroom observations were carried out to document group interactions, problem-solving strategies and the extent to which students engaged with the software. Finally, at the end of the intervention, follow-up interviews with student leaders were conducted to capture reflections on the learning process and the perceived benefits of using Superior Taxcom. These interviews were complemented by an evaluation of student presentations and discussions, assessed against established rubrics for critical thinking and problem-solving.

The qualitative data obtained through the various data collection methods was coded and examined using thematic analysis (Patton, 2002). This approach comprises identifying recurrent patterns of behaviour and consistency and assigning a unique code to each data unit. Data coding was used to identify the themes and categories in qualitative data. Data coding is a cyclical process, and it usually takes several cycles of coding procedures to provide a solid coding output.

4. FINDINGS

4.1 Students' Preparedness and Perspectives

4.1.1 Awareness of Technology's Role in Accounting

Students demonstrated varying levels of awareness regarding the role technology plays in contemporary accounting practices. Many students acknowledged that technology is integral to the profession, citing examples such as accounting software, cloud-based platforms and data analytics tools. For example, one student noted that *"I have developed several key skills, including improved my ability to analyse financial data and apply tax law accurately and improve my ability to manage time effectively while handling multiple tax computations and deadlines, as well as gain hands-on experience with tax computation software."* [S:19]. Another student stated that *"I have obtained valuable skills such as full awareness of tax rules and regulations, improved analytical and practical problem-solving ability, and precise attention to detail. I've also improved my time management and organisation skills, allowing me to manage various activities and deadlines more efficiently. In addition, I've improved my communication and teamwork skills, as well as my understanding of ethical tax compliance norms. Overall, these abilities prepare me for effective and responsible tax compliance practice."*[S:11].

4.1.2 Perceived Relevance and Value

Another emerging theme is the perceived relevance and value of technology-related instructions. Participants, which are students, generally viewed the integration of technology in accounting education as highly valuable, especially in terms of improving employability and workplace readiness. For instance, one student explained, *"Enhance my technical skills in accounting, taxation knowledge, critical thinking abilities and familiarity with industry-standard software." [*S:13]. This integration also helps to bridge the gap between theoretical learning and practical implementation as emphasised by a student, *"Provide hands-on experience, effectively bridging the gap between theoretical learning and practical implementation"* [S:17]. Participants perceived technological skills not only as supportive tools but also as enablers of efficiency, accuracy and professionalism in the accounting process. For some, technology was also seen as a source of motivation and engagement during their studies as stated by one of the students, *"Enhances the learning experience by providing a comprehensive and intuitive platform for managing tax-related information, making it easier to understand complex tax concepts. Its interactive tools and real-time updates ensure that learners stay informed of the latest tax laws and regulations, facilitating a more dynamic and engaging educational process. Additionally, the platform's user-friendly interface and accessible resources cater to various learning styles, thereby improving overall comprehension and retention."*[S:5]

4.1.3 Confidence in Using Technology

Confidence emerged as a critical theme influencing how students approached technology-related learning tasks. Confidence levels among the participants varied widely, some of them expressed ease and comfort, particularly those with prior experience or strong digital literacy: *"Superior TaxCom activities have significantly contributed to the development of essential skills required as a university student. The need to analyse and solve complex tax issues has sharpened my critical thinking abilities. Extensive research on tax laws has enhanced my ability to find, evaluate and use information effectively. Managing the demands of tax assignments alongside other coursework has fostered my ability to work effectively in a team setting, further enriching my overall learning experience."* [S:21]; *"Superior TaxCom is really effective after being implemented into practice to improve learning. It gives a lot of hands-on, real-life experience that blends theoretical knowledge. Hence, the learning process is more wholesome and interesting. The activities* *encourage active participation, critical thinking and problem-solving to deepen the understanding and retention of knowledge."* [S:19]. Somehow, others voiced apprehension, especially when confronted with unfamiliar software or limited instruction, *"The main challenge I faced while doing Superior TaxCom activities was the difficulty in locating the appropriate fields for data entry. This issue arose because we were not provided with any introductory videos to familiarize us with the Superior TaxCom system. As a result, it was challenging to navigate the software and find the correct places to insert the required information."* [S:16]

5. CONCLUSION

The findings reveal three interconnected themes highlighting students' experiences with technology in accounting education. First, students demonstrated varying levels of awareness of technology's role, recognising its integral function in modern accounting practices and its contribution to developing technical, analytical and professional skills. Second, participants emphasised the perceived relevance and value of technology integration, particularly its role in enhancing employability, bridging theory and practice and fostering motivation and engagement through hands-on and interactive learning experiences. Finally, confidence in using technology emerged as a key factor, with some students expressing strong competence and comfort due to prior exposure, while others experienced difficulties navigating unfamiliar systems in the absence of sufficient guidance.

Based on the findings, it can be concluded that students generally recognise the critical role of technology in tax accounting education, though their levels of awareness, perceived value and confidence vary. The study shows that while many students acknowledge technology as an enabler of efficiency, accuracy and professional competence, others face challenges in navigating unfamiliar systems without adequate guidance. These insights directly reflect the objectives of SDG 4 (Quality Education), which emphasises inclusive and equitable access to quality learning and the development of relevant skills for employability and lifelong learning. By assessing students' preparedness and perceptions, the study underscores the importance of structured and well-supported technology integration in tax accounting curricula. Doing so not only enhances students' technical and analytical competencies but also ensures that they are better prepared to meet the evolving expectations of the accounting industry in the digital era. Ultimately, aligning educational practices with SDG 4 strengthens the readiness of future accounting professionals while fostering a more equitable and future-oriented learning environment.

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Paper ID: 03

Service Learning in Accounting Education: Recommendations from the Learners

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Abstract

This study explores the implementation and impact of service-learning within the context of Sustainable Development Goal 4 (SDG 4), which emphasizes quality education and holistic development. Universiti Utara Malaysia (UUM) has incorporated service-learning into its curriculum, particularly within the TISSA-UUM's Management Accounting course. Since 2018, students have been required to engage with local businesses or non-profit organizations to apply financial planning and budgeting techniques learned in class to real-world situations. Despite the potential benefits, research on the specific impact of service-learning on accounting education at TISSA-UUM remains limited. Therefore, this study aims to fill this gap by examining students' recommendations towards the improvement of service-learning projects. The study used an experimental approach that involved three teaching groups of Management Accounting II. Thematic analysis revealed three main themes: enhancing support systems, fostering networking opportunities, and integrating expert guidance. The findings of this study provide valuable insights for lecturers, students, and educational institutions on how to effectively conduct service-learning activities to achieve the goals of quality education outlined in SDG 4.

Keywords
Service-learning, Accounting Education, SDG 4

1. INTRODUCTION

Sustainable Development Goal (SDG) 4, *Quality Education*, encompasses not only the core functions of schooling but also the broader educational ecosystem. It emphasizes the rights of every child to survival, protection, holistic development, and active participation within learning environments (Haron, Sajari, & Ishak, 2021). In Malaysia, the federal government holds primary authority over educational matters, with responsibilities vested in the Ministry of Education (MOE) and the Ministry of Higher Education (MOHE). Both ministries are tasked with advancing the cultivation of soft skills, particularly *learning-to-learn* competencies, while promoting work-based learning initiatives that align graduate capabilities with labor market demands. These efforts are complemented by policies designed to incentivize employers to provide workplace learning opportunities and by the utilization of the Critical Occupations List as a strategic tool to identify and mitigate skills shortages (Khazanah, 2018).

One of the most effective mechanisms for achieving the aspirations of SDG 4 is the integration of experiential and practical learning within academic curricula. Service-learning represents a particularly powerful approach in this regard. By requiring students to apply classroom-acquired knowledge and skills to real-world community challenges, service-learning fosters creativity, problem-solving, and social responsibility (Yusof et al., 2020). Recognizing its potential, the MOHE introduced national guidelines for service-learning in 2019 through the *Service-Learning Malaysia – University for Society (SULAM)* framework, aimed at embedding this pedagogy systematically within higher education institutions (Department of Higher Education, 2019).

Universiti Utara Malaysia (UUM) has actively embraced this initiative. For instance, the Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM) has incorporated a service-learning component into its Management Accounting course since 2018. Within this framework, students collaborate with small enterprises or non-profit organizations, providing financial planning support in areas such as budgeting, sales and profit target setting, and customer-centered strategies. Through these projects, students are expected to apply and extend their understanding of financial planning concepts, integrating costing techniques acquired in prerequisite courses. Ultimately, the experience is designed to strengthen students' ability to make informed decisions in profit planning and operational management.

Despite its promise, limited research has been undertaken to evaluate the impact of service-learning on accounting students' learning outcomes at TISSA-UUM. Previous studies in Malaysia and abroad have largely focused on assessing the general effectiveness of service-learning, with comparatively less emphasis on discipline-specific contexts such as accounting. Given the novelty of service-learning within the Malaysian higher education system, it is particularly important to capture student feedback to better understand its educational value. The broader literature consistently highlights that service-learning thrives when community engagement and academic learning are meaningfully integrated, creating reciprocal benefits for both students and community partners within a shared ecosystem (Yusof et al., 2020). Accordingly, the present study aims to make recommendations for assessing service-learning at TISSA-UUM, ensuring alignment with the skills and competencies promoted under SDG 4.

The findings of this study are expected to provide valuable guidance for educators, students, and institutional leaders on optimizing service-learning practices to achieve quality education outcomes. As emphasized by Yusof et al. (2020), effective implementation requires careful attention to the perspectives of both lecturers and students, ensuring that the pedagogical design supports meaningful experiential learning. Properly executed, service-learning not only enriches students' academic competencies but also cultivates leadership, confidence, and a sense of civic pride in their contributions to society (Barnett, Jeandron, & Patton, 2009). Nonetheless, adequate preparation and continuous support from the early years of university are crucial to equip students for the challenges inherent in service-learning projects, thereby maximizing their potential benefits.

2. LITERATURE REVIEW

2.1 Concept of Service-Learning

Service-learning is widely recognized as a form of experiential education that integrates academic instruction with meaningful community engagement. It involves students undertaking activities that address human and societal needs while simultaneously engaging in structured reflection aimed at achieving intended learning outcomes (Najah Nadiah Amran & Hamdi Ishak, 2017; Arandi, Sugeng Utaya & Budijanto, 2016). The Association to Advance Collegiate Schools of Business (AACSB) emphasizes active learning as an essential strategy for developing students' soft skills, particularly critical thinking, collaboration, and problem-solving (AACSB, 2013).

Bringle and Clayton (2012) conceptualize service-learning as an educational approach that fuses knowledge acquisition with civic engagement, thereby reinforcing both academic and social competencies. Similarly, Aliyu Deba et al. (2015) position service-learning as a pedagogical method situated within broader teaching and learning strategies, as it enables students to apply theoretical knowledge in real-world contexts while addressing community challenges. This dual focus ensures reciprocal benefits for both learners and communities.

Kaye and Connolly (2013) propose a five-stage model of service-learning, which, although presented as distinct phases, often unfolds in overlapping and iterative ways. Stage one starts with investigation, identifying community needs through student interest inventories, social analysis, and action research using surveys, interviews, media, and observations. Followed by stage two, preparation, deepening academic knowledge, clarifying roles and responsibilities, and developing skills necessary for project implementation. The next stage is action, executing the service plan through direct or indirect service, advocacy, or research in collaboration with community partners. Next is reflection, critically examining experiences to connect cognition and affect, enhance self-awareness, and guide future practice. The final stage is demonstration, showcasing the cumulative learning and service outcomes through documentation and dissemination, often supported by technology. This cyclical process emphasizes the integrative and reflective nature of service-learning, situating it as a transformative pedagogy that enhances both academic achievement and civic responsibility.

2.2 Service-Learning Practices in Malaysia

In Malaysia, service-learning has gained prominence as a pedagogical strategy that enriches academic curriculum while strengthening students' civic values and community engagement. Institutionalized under the banner of *Service-Learning Malaysia – University for Society (SULAM)*, this initiative was officially introduced in 2016 as part of the *Malaysia Education Blueprint 2015–2025 (Higher Education)*. SULAM represents a systemic attempt to embed service-learning into credit-bearing courses, thereby aligning academic outcomes with broader societal contributions. Its aim is to cultivate graduates who are holistic, entrepreneurial, and socially responsible.

Empirical studies illustrate that service-learning in Malaysia is implemented through both "bottom-up" initiatives, driven by lecturers and students, and "top-down" directives aligned with institutional missions and national higher education strategies (Mamat et al., 2019). The methods employed are diverse, ranging from volunteerism, project-based learning, and discipline-specific projects to more comprehensive Capstone projects. These approaches may be integrated as stand-alone modules or embedded within the existing curriculum.

Several universities have demonstrated innovative applications of SULAM. For instance, Universiti Malaysia Sarawak (UNIMAS) integrates service-learning across multiple faculties, including Computer Science, Economics, Engineering, and Medicine, where students address community needs such as ICT training, system development, financial literacy, and public health (Musa et al., 2017). Similarly, Universiti Teknologi MARA (UiTM) incorporates SULAM projects to strengthen the nexus between academic knowledge and societal issues (UiTM, 2022). Universiti Pendidikan Sultan Idris (UPSI) has embedded service-learning within its Social Entrepreneurship course, enabling students to develop empathy, passion, and entrepreneurial skills while applying marketing and ethical principles to real-world community projects (Hudin et al., 2018).

Collectively, these examples underscore the versatility of service-learning in Malaysia and its potential to foster graduate attributes aligned with national educational aspirations. At the same time, they highlight the importance of institutional commitment, cross-disciplinary collaboration, and innovative pedagogy in ensuring the sustainability and scalability of SULAM initiatives.

3. METHODOLOGY

This research employs an experimental approach (Eriksson, Johansson, Kettaneh-Wold, Wikström, & Wold, 2000; Kirk, 1982). The participants in this research are the students from TISSA-UUM taking the Management Accounting II course. There are 3 teaching groups involved. Before implementing the service-learning approach, an initial open-ended interview was administered prior to the experimental treatment. During this stage, the question is more on the preparation of students and on the prior knowledge on service-learning.

Another set of open-ended interviews were administered immediately at the end of the experimental treatment to gather data on the reflections from the students on the experimentation, providing overall perceptions of the service-learning project used in the teaching and learning process. Next, the researcher selects the leader of each small group to be the interviewee. This is the open-ended interview session where the participants are free to share their experiences during the implementation of the service-learning project. During the implementation of the service-learning project, researcher did the observation on how students conduct the process. Researchers observed the methods and the actions done by students in gathering data from selected businesses and observed the way students interpret the results via discussion in class. Further, students are required to submit a project diary which provides in-depth records of the actions taken during the process of conducting service-learning project.

The qualitative data collected from these data collection procedures were coded and analysed using thematic analysis (Patton, 2002), which involves assigning each unit of data its own unique code and identifying repetitive patterns of actions and consistencies. Data coding was performed to identify the themes and categories of qualitative data. Data coding is a cyclical process, where usually several cycles of coding processes are needed for a good coding result, and the cycles of coding processes.

4. FINDINGS

4.1 Recommendations for Improving Service-Learning

4.1.1 Support

Institutional support emerged as a crucial factor in enhancing the success of service-learning projects. Students and lecturers highlighted the need for financial assistance and resources, particularly to acknowledge the cooperation of business owners and to enable students to explore opportunities beyond UUM. As one student noted, *"I would like to suggest TISSA-UUM to provide some financial support so that we can give some appreciation gift for the business owners that cooperate with us"* [S15]. Beyond financial support, participants emphasized the importance of comprehensive student preparation through orientation sessions, clear guidelines, and ongoing mentorship to ensure that students fully understand the objectives and expectations of service-learning. For example, one lecturer recommended, *"Integrate service-learning activities into the curriculum, ensuring that they are structured and recognized as part of the academic program"* [L1]. Furthermore, training for lecturers and students was considered essential, equipping them with skills in project planning, community engagement, and assessment methods.

4.1.2 Networking

Networking with external stakeholders was another area identified for improvement. Students reported challenges in securing cooperation from business owners, which at times delayed or hindered their projects.

For instance, one student explained, *"The challenge that I personally think is giving most trouble is when me and my group want to find business for this activity, but the owner of the business did not give any cooperation"* [S7]. To address this, participants suggested that TISSA-UUM establish formal partnerships with a range of businesses and organizations. Creating a database of companies willing to collaborate was seen as a practical solution that would save students time and frustration. As one participant recommended, *"My suggestion to TISSA-UUM is by providing a list of companies that are willing to take part in this project"* [S49]. Establishing stronger networks would not only enhance student experiences but also ensure that projects are more meaningful and impactful for the community.

4.1.3 Expert Touch

The involvement of experts, both faculty members with practical experience and professionals from the business community, was highlighted as an important element in improving service-learning. Participants suggested that mentors or facilitators should guide students throughout the process, offering advice, answering questions, and providing feedback to bridge the gap between theory and practice. A lecturer emphasized, *"TISSA-UUM can assign mentors or facilitators who can provide guidance and support to the students throughout the service-learning process"* [L3]. In addition, comprehensive briefings and training sessions were recommended to ensure students were well-prepared before engaging with communities. Students acknowledged the value of such efforts, with one remarking, *"The assistance provided, particularly through the project briefing delivered by the lecturer, has been instrumental in ensuring a clear understanding of the implementation process"* [S10].

In summary, the recommendations for improving service-learning at TISSA-UUM center on three interrelated aspects: providing stronger institutional support, building robust and cooperative networks with external partners, and incorporating expert input to enhance guidance and professional relevance. These strategies would not only ensure smoother implementation but also maximize the transformative potential of service-learning, preparing students with the knowledge, skills, and civic awareness required for professional and societal contributions.

5. CONCLUSION

Institutional support plays an essential role in ensuring the sustainability and success of service-learning initiatives. Adequate funding, dedicated staff, continuous faculty development, and robust student support systems are essential to facilitate meaningful engagement. Beyond internal structures, strong community partnerships, the involvement of alumni networks, and collaboration with industry stakeholders can substantially enrich the service-learning experience, fostering authentic linkages between theoretical instruction and practical application. Ultimately, service-learning represents a transformative educational practice that prepares students not only for professional success but also for active citizenship. By creating reciprocal relationships between universities and communities, service-learning generates benefits that extend beyond the classroom, simultaneously enhancing students' competencies and contributing to societal development. As Malaysian higher education institutions continue to refine and institutionalize service-learning programs, their potential to advance the goals of SDG 4: Quality Education and to produce graduates who are skilled, socially responsible, and future-ready will only become more significant.

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Paper ID: 04

Do Sustainability Reporting and Board Attributes Improve Future Performance? Evidence from Agricultural Industry in Malaysia

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Abstract

Previous studies regarding the impact of board attributes and sustainability reporting on future performance are limited and equivocal, suggesting the need for more systematic investigation to explain these relationships. This study examines the effect of board attributes (size, independence, gender) and sustainability reporting on future corporate performance on all agricultural companies in Malaysia. Using 128 observations of Bursa Malaysia agricultural companies and the Feasible Generalized Least Square model, this study concludes that sustainability reporting and board gender diversity have little bearing on year +1 performance. Nonetheless, sustainability reporting considerably increased performance in year +2 and year +3, while gender diversity significantly improved performance in year +3, suggesting that it will take an extended period to reap the advantages of these endeavours. Robust analysis using panel-corrected standard error regression (PCSE) and an alternative measure for sustainability reporting yield comparable results confirming robustness of the analyses. Conversely, the study finds that board independence negatively influences performance in year +1 and board size has no discernible effect on future performance. The study has implications for policy makers, researchers, and managers to comprehend the effect of sustainability reporting and board attributes to efficiently managing resources toward better future performance.

Keywords
Sustainability Reporting, Board Attributes, Corporate Governance, Gender Diversity, Future Performance

1. INTRODUCTION

The role of business in society has been debated for a long time (e.g., Maletic et al., 2015). Studies argue that companies have a crucial role in business sustainability since they are responsible for many sustainability-related problems and, simultaneously, can be the potential solution to them (e.g., Grimes and Vogus, 2021). Thus, managing business governance and sustainability practices is imperative in achieving current and future performance.

Firm financial performance can be affected by numerous determinants, including governance, financial policy and financial reporting (Alodat et al., 2022; Feng et al., 2023). Studies on corporate governance and sustainability are limited and equivocal, especially in emerging markets (e.g., Smith et al., 2007). For example, Abdul Latif et al. (2020) find that the environmental disclosure index (one dimension of sustainability reporting) in Malaysia was merely 20 percent of a self-constructed environmental disclosure index.

Studies claim that board effectiveness plays a pivotal role in managing a company thus influencing company financial performance (e.g., Alodat et al., 2022). Findings on the relationship between board attributes and performance yield mixed results thus warrant further examination on issues linking governance, sustainability concerns and financial performance (e.g., Maletic et al., (2015).

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Board Attributes

The board of directors is regarded as a crucial element of the system in corporate governance. While resource dependence theory posits that a board comprising more insiders may possess greater expertise in managing the business more efficiently, agency theory contends that firms with strong governance outperform those with weak governance (Zhou et al., 2018). Empirical findings on the association between board attributes and firm performance are inconclusive (e.g., Queiri et al., 2021). Bursa Malaysia has mandated since July 2001 that listed companies must have between two or more independent directors, or one-third fraction of the board members to improve board effectiveness (e.g., Burhan & Rahmanti, 2012). Studies such as Bae et al. (2018) contend that independent directors can potentially lower expenses on monitoring management while defending stakeholders' interests which consequently improve firm performance. Likewise, studies argue that having more women on board potentially increases board effectiveness which improve corporate governance standards and business performance (e.g., Velte (2017). This study utilized three dimensions for board effectiveness namely board size, board independence, and the existence of women directors on board. Based upon the above-mentioned theories and evidence, this study proposes the following hypotheses:

H_{1a}: Board size and future performance have a positive and significant association.
H_{1b}: Board independence and future performance have a positive and significant association.
H_{1c}: Board gender diversity and future performance have a positive and significant association.

2.2 Sustainability Disclosure Scores (Quality)

The introduction of International Financial Reporting Standards (IFRS) advances worldwide comparable to financial reports and the ongoing advancement of financial reporting (Ball, 2016). Continuous improvement in corporate disclosure practices is necessary to increase disclosures' usefulness, relevance, and informativeness (e.g., Lev, 2018). Sustainability reporting is one of its initiatives. Loh et al. (2017), find a favourable link between sustainability ratings and market value while Yu et al. (2018) claim that more sustainability transparency boosts corporate value. Studies on the impact of sustainability reporting and corporate performance are scarce especially from emerging nations thus warrant further investigations (Nwaigwe et al., 2022). Based on the above arguments, we hypothesise the following:

H_2: The degree of sustainability reporting is significantly associated with future performance.

3. METHODOLOGY

3.1 Sample

We focused on agriculture companies for their tremendous impact on the environment and contribution to Malaysian economics. All forty-four agriculture companies listed on Bursa Malaysia were used as sample firms for the years 2016 to 2018. Accordingly, future accounting performances (ROA) for the year 2017 to 2021 were included. Overall, there were 132 observations for the three-year period, however there were some missing data leaving the final sample to be 128 observations. To test our hypotheses, we construct the following empirical model for each year +1, +2 and +3:

$$FP_{it+1-3} = \alpha + \beta_1 BSZ_{it} + \beta_2 BIND_{it} + \beta_3 DIVERSITY_{it} + \beta_4 SUST_{it} + \beta_5 FSZ_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$

Table 1 presents the operational measurement for all variables. Sustainability Score Disclosure Quality (SUST) is a self-developed indicator or index that follows the GRI and the 2018 Bursa Malaysia Sustainability Guidelines. A total of fifty-two disclosure items based on three categories: 30 items on environment, five items on economics, and 17 items on social disclosures. Cronbach's Alpha result for reliability and internal consistency was 0.92 which implied that the items in the assessment instrument reliably measure the same underlying construct (Izah et al., 2024). Following previous studies, we included business size and leverage as control variables to reduce model misspecification (Abdul Latif et al., 2023).

Table 1: Operational Measurement of Variables

Variable	Explanation	Operational measurement
FP	Future performance	Return on Assets: Net income to total assets for years t+1, t+2, t+3. Denote as ROA1, ROA2, ROA3
BSZ	Board size	Number of directors on the board.
BIND	Board independence	Percentage of independent board members on the board.
DIVERSITY	Women directors and women senior management executives	Percentage of women directors and senior women executives on the management team.
SUST	Sustainability Score Disclosure Quality	Sustainability score index. Based on GRI and 2018 Bursa Malaysia Sustainability Guides. The score follows Abdul Latif et al. (2023).
FSZ	firm size	Natural log of total assets
LEV	leverage	Total debt to total assets

4. FINDINGS AND ANALYSIS

4.1 Diagnostic Analysis

Table 2 presents the Spearman correlation matrix for all variables. None of the correlations exceeds 0.6 which indicates that there is no serious multicollinearity issue (Hays, 1983). Additionally, the variance inflation factor provided in Table 3 shows that each variable has values less than 3, which confirms no serious multicollinearity issues (Hair et al., 2014). This study employed panel data regression. We checked for cross-sectional dependence, serial correlation and heteroskedasticity. Pearson Test came out clear of cross-sectional dependence. However, the Wooldridge test for panel data serial correlation and the Modified Wald group test of heteroskedasticity each provided p-values of 0.000, indicating that the data suffer issues of serial correlation and heteroskedasticity. Using normal panel data estimation such as pooled, random effect and fixed effect model would produce biased results (Astivia et al., 2019). Accordingly, the appropriate estimation models that can mitigate these issues are Feasible Generalized Least Squares (FGLS) (e.g., StataCorp, 2019) and Panel Corrected Standard Errors (PCSE) (such as in Rahman & Zahid, 2021).

Table 2: Spearman Correlation Matrix

		1	2	3	4	5	6	7	8	9
1	ROA1	1.00								
2	ROA2	0.215	1.00							
3	ROA3	0.176	0.177	1.00						
4	BSZ	0.105	0.053	0.072	1.00					
5	DIVERSITY	0.000	0.011	0.180	0.253	1.00				
6	BIND	-0.162	-0.071	-0.048	-0.495	0.024	1.00			
7	SUST	0.076	0.117	0.279	0.421	0.303	-0.147	1.00		
8	FSZ	0.211	0.062	0.003	0.349	0.253	0.121	0.574	1.00	
9	LEV	-0.208	-0.018	0.073	0.169	0.188	0.077	0.344	0.082	1.00

Note: ROA1, ROA2, ROA3 are returns on assets on year +1, year +2, year +3, respectively. BSZ is board size, BIND is board independence, DIVERSITY is gender diversity, SUST is the level of sustainability reporting score, FSZ is firm size, and LEV is leverage.

4.2 Descriptive Analysis

Table 3 illustrates the descriptive statistics and VIF for the variables of interest. The sample board size averages about eight directors, with a range of four to twelve. Independent board members (BIND) account for around 47 percent of the board on average. Female directors (DIVERSITY) on agricultural boards are considerably underrepresented, with a maximum of 38 percent and an average of 8 percent. The average score for the sustainability quality score (SUST) is 33 percent where the maximum score is 63 percent.

The study used ROA in year + 1, +2 and +3 denoted as ROA1, ROA2, ROA3 respectively as the future performance metrics. The highest ROA1, ROA2 and ROA3 recorded are 22.63, 31.08 and 33.94 respectively, while the average ROA1, ROA2, and ROA3 are 1.77, 1.85 and 3.36 respectively. Corporate size (FSZ), as defined by the natural log of total assets, ranges from 18.84 to 23.92. Leverage was calculated as total debt scaled by total assets, with an average value of 29 percent and a maximum value of 78 percent.

Table 3: Descriptive Analysis and VIF for Independent Variables

Variables	Mean	Max	Median	Min	Std. dev	VIF
ROA1	1.77	22.63	1.39	-10.4	5.23	
ROA2	1.85	31.08	1.06	-10.4	6.09	
ROA3	3.36	33.94	2.36	-8.85	6.74	
BSZ	7.72	12.00	7.00	4.00	2.12	1.82
BIND	0.47	1.00	0.44	0.25	0.15	1.54
DIVERSITY	0.08	0.38	0.07	0.00	0.09	1.23
SUST	0.33	0.63	0.31	0.13	0.12	1.98
FSZ	21.09	23.92	20.94	18.84	1.23	2.46
LEV	0.29	0.78	0.29	0.01	0.20	1.22

Note: ROA1, ROA2, ROA3 are returns on assets on year +1, year +2, year +3, respectively. BSZ is board size, BIND is board independence, DIVERSITY is gender diversity, SUST is the level of sustainability reporting score, FSZ is firm size, and LEV is leverage.

4.3 Regression Analysis

Some continuous variables were winsorised to reduce outliers' bias. Table 4 shows regression results using Feasible Generalised Least Square (FGLS) between the future performances ROA1, ROA2, ROA3 and independent variables. Table 4 shows that the number of members on the board (BSZ) does not have a significant effect on all future performances (ROA1, ROA2, ROA3). Likewise, Ramadan and Hassan (2022) found a lack of relationship between board size and current business performance (ROA). This could be due to managing a larger board is challenging thus compromising the board's ability to monitor performance (Jensen, 1993). Based on Table 3, many companies are near to the upper limits for board size which is more than 7 members, consequently exacerbating agency issues as some members wind up acting as "free riders" and participate ineffectively in managing the company.

Table 4 exhibits the existence of a significant inverse connection between the ratio of independent directors and the immediate future performance in ROA1. This is in contrast with the assertion of agency theory and the recommendation of the revised Malaysian code on corporate governance 2021 (The Securities Commission, Malaysia, 2021) for publicly traded companies urging a substantial proportion of independent directors to be engaged on the board to boost profitability. Nevertheless, the association between board independence and longer-term future performance diminished in ROA2 and ROA3 which signals that board independence lacked effective monitoring and advising capacity. Studies argue that independent board members are not capable of influencing future performance because they are “too busy” or uninformed about the business (for example, Al-Sartawi, 2018).

The result in Table 4 indicates an insignificant relationship between women directors and executives (DIVERSITY) and immediate future performances (ROA1 and ROA2). However, the relationship becomes significantly positive at the 5% level in ROA3, which implies that it would take extended years to see the benefits of having women directors and women senior executives in the company’s management team. Prior studies on the link between women directors and firm performance provide mixed results. Some researchers have found a beneficial association between the existence of female executives and company success (for example, Gordini & Rancati, 2017), while others provide no association or negative relationship (for example, Ahern & Dittmar, 2012). We argue that having women on corporate boards and management teams opens the possibility of having conversations on issues affecting a wider range of stakeholders rather than just the company's financial success and therefore requires extended time to be apparent and may not be measured solely by financial performance.

Table 4: Feasible Generalized Least Square (FGLS) Results

	ROA1(Y+1)		ROA2(Y+2)		ROA3(Y+3)	
	coef	p-value	coef	p-value	coef	p-value
BSZ	-0.786	0.396	-0.172	0.882	-0.203	0.242
BIND	-7.171	0.000***	-1.812	0.337	-0.903	0.754
DIVERSITY	-0.938	0.648	2.306	0.364	7.955	0.043**
SUST	-3.944	0.055*	5.184	0.032**	17.902	0.000***
FSZ	1.734	0.000***	0.462	0.038**	-0.608	0.059*
LEV	-6.752	0.000***	-0.742	0.549	1.138	0.280
CONS	-6.751	0.000***	-8.692	0.021**	11.080	0.058*
Wald chi	228.36		28.33		74.55	
P chi	0.000		0.001		0.000	

Note: BSZ is board size, BIND is board independence, DIVERSITY is gender diversity, SUST is the level of sustainability reporting score, FSZ is firm size, and LEV is leverage.
*, **, *** significant at 10%,5% and 1% respectively

There is a significant negative association involving sustainability reporting with future performance in ROA1, possibly due to the significant cost incurred in producing sustainability reports. However, the results show significant improvement in ROA2 and ROA3, suggesting that the payback period for sustainability reporting exceeds 1 year. Laskar and Gopal Maji (2018) find that both the level and sustainability reporting quality improve the current performance of developed and developing countries in Asia. Likewise, Martí-Ballester (2015) investigated the impact of sustainability on firm success companies listed on the Stoxx Europe 600 index and the Stoxx Europe Sustainability Index and discovered that organizations that contribute to sustainable development have superior financial success. The research also reveals that organizations that use sustainability-related strategies outperform those that implement typical management techniques in terms of financial success. Firm size (FSZ) significantly enhances future performance in two consecutive years (Year +1, Year +2), although at a lower significant level. Leverage negatively influences future performance in year+1 but failed to have any significant impact in later years.

4.4 Robust Analysis

We conducted a robust analysis to verify the relative sensitivity and reliability of the primary conclusion in Table 4. Studies such as Rahman and Zahid (2021) have utilized Panel Corrected Standard Errors (PCSE) to address issues relating to autocorrelation and heteroscedasticity. Additionally, we used the total number of pages in sustainability reports as an alternative measure of sustainability reporting. Overall, results for robust analysis using PCSE are relatively similar. The presence of women on the board and management team (DIVERSITY) provides no significant influence on future performance in year+1 and year+2 but provides significant impact in year+3. Likewise, sustainability reporting significantly enhances future performance in year+3. Results on board size, board independence, firm size and leverage are almost identical as in the main analysis. Therefore, we can conclude that our results are consistent, reliable, and robust.

5. CONCLUSION, LIMITATION AND FUTURE AVENUES

Using FGLS and PCSE estimations on 128 observations of all agricultural companies in Malaysia, this study seeks to objectively examine whether board attributes and sustainability reporting significantly influence future firm performance proxied by ROA in year +1, +2, and +3. Our results reveal that board size (BSZ) does not have a substantial relationship with future corporate success, which supports that board size participates ineffectively in managing the company, thus compromising the board's functions to monitor the firm's future performance. We verify that there is an inverse link between board independence and performance in year +1, but diminishes in later years. We argue that this might be due to board members being unable to significantly improve the performance of the company because they are either too busy or ignorant about the business environment and market in which it operates. The study evidence that the inclusion of women directors and managers significantly improves future performance in year +3 which suggests that their benefits require extended time to materialize. We contend that having women on corporate boards makes it possible to have boardroom discussions on issues affecting a larger range of stakeholders rather than just the company's financial success in a short period. Likewise, sustainability reporting significantly improves future performance in year+2 and year+3 which clearly demonstrates that its full benefits intensify over time. These findings suggest that it will take longer than a year for the advantages of sustainability reporting and gender diversity to become apparent. The findings offer fresh ideas and implications to policy makers, directors and academicians on the effect of board attributes to deploy resources effectively for improved performance in the future.

This study has several limitations as it only deals with one industry, focuses on limited governance variables, covers a limited time frame and employs quantitative analysis, to name a few. Future studies could extend this research to include other industries, examine other governance variables, extend the study period and utilize other methods of analysis.

ACKNOWLEDGEMENT

This study was made possible by the funding provided by The Ministry of Higher Education (MoHE) of Malaysia through the Fundamental Research Grant Scheme (FRGS/1/2018/SS01/UUM/02/11).

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Paper ID: 05

Do Board Attributes Affect the Quality of Integrated Reporting? Evidence from Agricultural Companies in Malaysia

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Abstract

The main objective of this study is to investigate the influence of board of directors' attributes on the integrated reporting disclosure quality (IRQ) among agriculture companies in Malaysia. The study employs content analysis of the annual report and integrated report to measure the IRQ, followed by Feasible Generalised Least Squares (FGLS) regression to examine the relationship between board characteristics and the IRQ. The FGLS reveals that board gender diversity significantly enhances IRQ. Robustness tests applying the Panel Corrected Standard Errors (PCSE) regression and an alternative proxy for IRQ were also conducted, and the results remain identical. This study contributes to improving the quality of corporate reporting in agriculture companies, which may in turn encourage greater private investment in the sector. The findings of this study are also relevant to both corporate governance initiatives and the development of agricultural and trade policies by the Malaysian government.

Keywords
Board Attributes, Corporate Governance, Gender Diversity, Integrated Reporting (IR)

1. INTRODUCTION

Integrated Reporting (IR) has gained increasing importance as a medium for enhancing corporate transparency, accountability, and sustainable value creation. It provides a holistic view of an organisation's performance, encompassing financial and non-financial performance that is particularly crucial to attract long-term investment as well as to support strategic decision-making. Due to its significant environmental, social, and economic implications (Topp-Becker & Ellis, 2017), the agriculture sector expects substantial benefits from the implementation of IR. However, the adoption of IR in Malaysian agricultural businesses remains low. This can be attributed to several factors, including limited awareness and knowledge of IR as well as the voluntary nature of IR (Mohammed et al., 2021).

Improving IR adoption in Malaysian agriculture companies requires targeted interventions focusing on governance structures, particularly the attributes of the Board of Directors. From the resource dependency viewpoint, directors provide benefits in the form of a diverse range of relationships and resources, including skills, information, expertise, and connections with major external parties (Hillman et al., 2000). Thus, it is expected that board diversity is likely to bring a broader range of perspectives and experiences, fostering a culture that values comprehensive reporting and accountability. Moreover, the presence of directors with expertise in sustainability and financial reporting would drive the integration of IR into the company's strategic objectives. Thus, this paper examines the influence of Board of Directors attributes on the quality of IR disclosure among agriculture companies in Malaysia.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Malaysian companies are encouraged by Bursa Malaysia to adopt IR practices in their annual report since 2012 (Sun Daily, 2017). However, only a limited number of companies have fully adhered to the IR Framework, while others have partially complied by disclosing selected elements of the framework (PwC, 2018). As the agricultural sector consumes substantial resources, including water, labour, land, financial capital, equipment, and consumer markets, there is increasing concern regarding the sector's impact, not limited to the environment but also on broader economic and social sustainability (Topp-Becker & Ellis, 2017). In this context, it is important for agricultural companies to respond to various stakeholders' expectations by providing reports that present information from multiple perspectives. From the resource dependency viewpoint, directors provide a wide range of resources to organisations (Hillman et al., 2000). The additional resources and synergy brought into business through the relevant qualities of a varied board of directors, resulting in broader experience, knowledge, understanding, and expertise that are capable of driving better integrated reporting and strategic communication with stakeholders.

In this regard, a larger board size brings together a wider range of experiences, which supports the integration of reports and strengthens the board's oversight role (Fayad et al., 2022). Cooray et al. (2020) also observed a positive influence of board size on the quality of integrated reporting (IRQ). In a similar vein, a higher composition of independent directors improves the board's ability to monitor management effectively (Liao et al., 2018) and encourages greater transparency by placing pressure on the management to disclose information that is relevant to stakeholders (Haniffa & Cooke, 2002; Alexandrina, 2013). Vitolla et al. (2020a) further emphasized that independent directors improve integrated reporting quality, This implying that the greater composition of independent director inclines to a higher quality of integrated reports In addition, female directors contribute through their distinct perspectives, leadership approaches, and ethical values, which can lead to better oversight for corporate disclosure (Halid et al., 2021) and promotes the development of higher-quality information disclosure to stakeholders (Gul et al., 2011). Similarly, Vitolla et al. (2020a) found that greater female representation on boards improves the overall integrated reports quality. Drawing from the above discussions, three hypotheses are proposed.

H1 There is a positive association between board size and the quality of integrated reporting disclosures.
H2 There is a positive association between board independence and the quality of integrated reporting disclosures.
H3 There is a positive association between board gender and the quality of integrated reporting disclosures.

3. METHODOLOGY

3.1 Sample

A quantitative research design was employed in this study, which used secondary data from all agricultural companies listed on Bursa Malaysia between 2017 and 2020. We focused only on the agricultural industry for its significant environmental impact and contribution to the Malaysian economy (Tang & Al Qahtani, 2020). The sample consisted of 175 firm-year observations (44 plantation companies x 4 years, less 1 missing observation).

3.2 Variables Operational Definition and Equation Model

The level of Integrated Reporting quality (IRQ) is the dependent variable. IRQ is a self-developed index adapted from the Integrated Reporting Index (IIRI). A total of forty-seven items were included: fifteen items related to organizational overview and external environment, seven items related to governance, five items related to business model, three items related to risk and opportunities, six items related to performance, four items related to outlook, four items related to strategy and resource allocation and three items related to basis of preparation and presentation were evaluated. Following previous studies (such as Jamil et al., 2020), this study used a weighted modified four-point scale to measure IRQ. Cronbach's Alpha result for the IRQ index was 0.89, which implied that the items in the assessment instrument reliably measure the same underlying construct (Izah et al., 2024). We developed the following regression equation for our model:

$$IRQ_{it} = \alpha_{it} + \beta_1 BSZ_{it} + \beta_2 BIND_{it} + \beta_3 BG_{it} + \beta_4 ROA_{it} + \beta_5 LEV_{it} + \beta_6 TA_{it} + \varepsilon_{it}$$

The operational measurements, as well as sources of information used in the equation of regression, are presented in Table 1.

Table 1. Variables, Operational Measurement, and Source of Information Used.

Variables	Operational measurement	References
Integrated Reporting Disclosure Quality (IRQ)	IR disclosure quality index. Self-weighted scoring computed using the actual score of IRQ disclosed.	International Integrated Reporting Framework (IIRC, 2021).
Board size (BSZ)	Number of directors on the board.	Abdul Latif et al. (2020)
Board independent ratio (BIND)	The number of independent board members to the total number of board members.	Fayad et al. (2022)
Board gender (BG)	The number of female directors on the board.	Qaderi et al. (2022),
Profitability (ROA)	Return on assets. Net income / Total assets.	Helfaya & Moussa, 2017
Leverage (LEV)	Total liabilities / Total assets.	Abdul Latif et al., 2023
Total Assets (TA)	The natural log of total assets.	Chouaibi et al. (2022)

We included two control variables to mitigate model misspecification. In line with prior research, we included profitability, measured by the ROA (Helfaya & Moussa, 2017) and leverage (LEV) following Abdul Latif et al., 2023)

4. FINDINGS AND ANALYSIS

4.1 Diagnostic Tests and Descriptive Analysis

Table 2 presents the Spearman correlation matrix for all variables. None of the correlations exceeded 0.6, indicating there were no issues of serious multicollinearity (Hays, 1983). Additionally, the Variance inflation factor (last column in Table 3) provides that each variable has values of less than 3, which confirms that there were no serious multicollinearity issues (Hair et al., 2014). We ran diagnostic tests for cross-sectional dependence, serial correlation and heteroskedasticity. Pesaran Cross-sectional dependence produced insignificant results but Wooldridge test for serial correlation and Modified Wald group test for heteroskedasticity provided p-values of 0.000, which indicate there were issues of serial correlation and heteroskedasticity. In this case, using normal panel data estimation such as pooled, random effect and fixed effect models would produce biased results (Hoechle, 2007). Therefore, the appropriate estimation models that can mitigate these issues are Feasible Generalized Least Squares (FGLS) (StataCorp, 2019) and Panel Corrected Standard Errors (PCSE)(Rahman & Zahid, 2021).

Table 2: Spearman Correlation Matrix

	Variables	1	2	3	4	5	6	7
1	IR (Tot.Score)	1.000						
2	BSZ	0.180	1.000					
3	BIND	0.091	-0.392	1.000				
4	BG	0.370	0.313	0.115	1.000			
5	LNTA	0.500	0.289	0.214	0.498	1.000		
6	ROA (%)	0.060	0.204	-0.074	-0.057	0.103	1.000	
7	LEV (%)	0.345	-0.001	0.078	0.283	0.404	-0.176	1.000

Note: BSZ is board size, BIND is board independence, BG is board gender diversity, ROA is return on assets, LEV is leverage, LNTA is natural log of total assets.

Table 3 presents the descriptive analysis together with skewness, kurtosis, and VIF for variables. According to Kline (2011), skewness should be between + or -3, and kurtosis should not be more than +10. Table 3 confirmed that all variables were within the range, signifying that the variables were not highly skewed and were normally distributed. IRQ, quality of IR disclosure showed that the minimum and maximum score achieved were 17 points and 60 points for agriculture companies in Malaysia during 2017 to 2020.

Table 3: Descriptive Analysis

	MIN	AVE	MED	MAX	STDV	SKEWNESS	KURTOSIS	VIF
IRQ (Tot.Score)	17.0	38.19	38.87	60.00	7.943	0.139	0.169	
BSZ (Number)	4.00	7.245	7.000	12.00	2.023	0.021	0.076	1.61
BIND (%)	0.25	0.496	0.500	1.000	0.143	0.000	0.069	1.41
BG (Number)	0.00	0.725	0.000	4.000	0.860	0.000	0.422	1.47
LNTA	19.0	21.11	20.923	23.89	1.322	0.002	0.165	1.76
ROA (%)	-10.0	2.180	1.510	31.08	5.684	0.000	0.000	1.12
LEV (%)	0.00	0.194	0.200	0.502	0.152	0.232	0.000	1.31

From the board's perspective, board size (BSZ) has a minimum value of 4 and a maximum value of 4 and 12. This also indicated an average of 7.25 (7) directors were appointed in Malaysian agriculture companies. The mean (average) of board independence (BIND) was found to be 49% with the minimum and maximum value of 25% and 100%, respectively. Mean values for both board size and independence of directors obtained were almost the same as those found by Razak and Mustapha (2013), which were at 7.51 and 46%, respectively. Meanwhile, the median number for female directors (BG) was 0 and it ranges between 0 to 5 directors. The statistic reflected that some companies in the sample did not appoint any women directors on board.

4.2 Regression Results

Some continuous variables were winsorised to limit the potential bias of outliers. We used Feasible Generalized Least Squares (FGLS) for our model. Table 4 presents the regression results.

Table 4. FGLS Regression Results

	Coef.	Std Error	z-value	p-value
BSZ	0.052	0.173	0.30	0.763
BIND	2.418	2.738	0.88	0.377
BG	1.056	0.447	2.36	0.018**
ROA	0.065	0.058	1.11	0.266
LEV	10.97	2.789	3.93	0.000***
LNTA	1.859	0.345	5.38	0.000***
CONS	-5.541	6.379	-0.87	0.385
Wald chi square	176.8			
Prob chi2	0.000			

Note: BSZ is board size, BIND is board independence, BG is board gender diversity, ROA is return on assets, LEV is leverage, LNTA is natural log of total assets.
***, **, * significant at 1%,5% and 10% respectively**.**

Based on the findings in Table 4, board size (BSZ) has a positive (z-value = 0.30) but insignificant relationship (p-value = 0.763) with IRQ. Thus, our *H1* is not supported. Contrary to previous empirical IR studies, such as Fayad et al. (2022), who discovered a positive relationship between board size and IRQ. Some studies argued that large board size can significantly reduce effective communication and monitoring, hence failed to have any positive impact on IRQ (such as Songini et al., 2022). This study finds that board independence has an insignificant positive relationship with IRQ (z-value=0.88, p-value=0.377) thus fails to support *H2.* Previous research has yielded mixed results on the relationship between IRQ and independent directors. For example, Halid et al. (2021) found no significant relationship with IRQ, which suggests ineffective monitoring by the independent board. On the contrary, Chouaibi et al. (2022) found significant positive relationships between independent boards and IRQ. The result in Table 4 indicates that board gender (BG) is significantly related to IRQ quality at a p-value of 0.018 and a positive coefficient of 1.056, thus supports *H3*. The finding is parallel with previous IRQ studies, including Fayad et al. (2022). This indicates that a higher composition of women directors would significantly enhance IRQ prepared by the company.

The result for the control variable, ROA, is positive but insignificant (p-value = 0.266), indicating that being a profitable company does not significantly improve IRQ. However, this result is opposite to the findings of Islam (2021), who found positive and significant relationships between IRQ and ROA among 20 non-financial firms in Bangladesh. It is argued that profitable firms led the way in embracing new approaches to corporate reporting, and companies with higher ROA were able to afford higher compliance costs. Furthermore, better-performing companies deliberately use new reporting methods like IR to showcase their strong financial and operational performance to different stakeholders (Vitolla et al., 2020b). The result from Table 4 indicates that leverage has a positive and very significant relationship with IRQ (p-value = 0.000). This is to say that leverage has a significant impact on IRQ among agriculture companies in Malaysia. Likewise, using 788 observations of Nigerian listed companies, Haladu and Bin-Nashwan (2023) evidence that a marginal significant effect of financial leverage mitigates the relationship between IR and shareholders' funds.

4.3 Robust Analysis

We conducted two further analyses to substantiate the results of our study. First, we used another estimation model, which is Panel Corrected Standard Errors (PCSE) regression, developed by Beck and Katz (1996) to mitigate issues relating to heteroskedasticity and contemporaneous correlation across panels (i.e., cross-sectional units). Results using PCSE estimation remain identical to the previous results achieved in Table 4. Secondly, we used an alternative proxy for IRQ, which is the ratio of IRQ measured by the total points scored by each observation to the total points available. Similarly, results remained identical, confirming the robustness of our results.

5. CONCLUSION, LIMITATION AND FUTURE AVENUES

This study investigates the effect of three board attributes (size, independence and gender diversity) on the quality of integrated reporting (IRQ). Based on the main and robust analyses, board gender diversity consistently enhances IRQ, while board size and board independence provide no evidence of a significant relationship with IRQ. The possible explanation of these findings may be attributed to the low level of awareness of IR, as it is voluntary for all Malaysian companies. We contend that IR is a rather new form of reporting in Malaysia therefore, directors are required to be more understanding and involved in an integrated way of thinking that differs from traditional disclosure. From the stakeholders' perspective, IR is very useful in making informed investment decisions because IR provides relevant and comprehensive information needed. Possibly, by promoting board diversity and ensuring that leadership is committed to sustainability and long-term value creation, agricultural companies can overcome current challenges and leverage IR to achieve better environmental, social, governance, and economic outcomes. The findings of this study help raise the standard of corporate reporting, which could lead to more private investment in Malaysian businesses. Additionally, it has implications on corporate governance practices and government policies, especially in the agriculture industry in emerging economies.

This study has several limitations, as it only focuses on one industry, a limited time span and limited corporate governance variables and explanatory variables. Future research could scrutinize the IRQ index, extend the time frame, include several industries, and investigate the effect of other governance and explanatory variables.

ACKNOWLEDGEMENT

This research was supported by the Ministry of Higher Education (MOHE) of Malaysia through the Fundamental Research Grant Scheme (FRGS/1/2020/SS01/UUM/02/13).

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Paper ID: 06

Do Employee Voices Matters in Finance: A Meta-Analytic Review

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Abstract

Research examining the link between corporate performance and employee reviews remains fragmented, despite growing reliance on platforms such as Glassdoor to gauge workplace experiences. This meta-analytic review addresses this gap by synthesizing nine peer-reviewed studies published between 2015 and 2023. The objective is to assess how firm performance indicators align with employee satisfaction, work-life balance and organizational reputation. Results from a fixed-effects model show a significant positive association, suggesting that stronger financial and operational outcomes are reflected in favourable employee evaluations. A random-effects model reveals a modest but consistent effect, indicating robustness across varied contexts. The findings emphasize that while corporate success often translates into improved employee sentiment, the relationship is neither uniform nor universal. In terms limitation of the study, the predominance of North America based studies constrains the generalizability of these results across diverse institutional and international settings. Future research should extend cross-country comparisons, integrate qualitative perspectives to explain underlying mechanisms and explore sector-specific dynamics. By clarifying how corporate outcomes shape employee voice, this review contributes to advancing theory and practice at the intersection of firm performance and workplace perceptions.

Keywords
Corporate Performance, Employee Reviews, Forest Plot, Meta-Analytic, Glassdoor

1. INTRODUCTION

In the modern corporate landscape, employee voice has emerged as a crucial indicator of organizational health, culture and performance. The rise of digital platforms, particularly those featuring online employee reviews, has provided a new and influential channel for capturing this sentiment on a massive scale. Among these, Glassdoor stands out, offering a vast repository of real-time employee feedback that can be used to analyse firm performance and management effectiveness. With millions of employer reviews globally (Galiano-Coronil et al., 2024), this platform has created a substantial dataset ripe for academic scrutiny.

While a significant body of research explores the financial implications of employee satisfaction, there's a notable gap in the systematic and comprehensive assessment of how these online reviews relate to corporate performance. Specifically, no consolidated, meta-analytic review has synthesized the existing literature to determine the overall effect of online employee ratings on financial metrics. The current literature remains fragmented, with studies examining various aspects of this relationship but lacking a holistic, quantitative summary of the findings. This is particularly true in the Malaysian context, where studies have explored specific facets of employee feedback (Kock et al., 2025) but have not yet provided a broad overview of the link between online reviews and firm performance.

This study addresses this critical gap by conducting a meta-analytic review of the existing empirical research on the link between firm performance and employee reviews on Glassdoor. Our objective is to provide a comprehensive and quantitative synthesis of the current literature. We aim to answer the central question **(RQ)**: "*Do employee voices, as expressed through online reviews, matter in finance?*" By aggregating the findings of numerous studies, we will determine the overall effect size of this relationship and identify potential moderating factors. Furthermore, this research will highlight key trends and future research directions, offering valuable meta-analytic review insights to guide future scholarly work in this discipline.

1.1 Glassdoor: An Overview

Glassdoor has emerged as a premier online platform that provides rich, user-generated datasets on employee experiences and perceptions, offering invaluable insights into factors that shape job satisfaction and overall well-being (Dube & Zhu, 2021; Galiano-Coronil et al., 2024). Through this crowdsourced data, the platform offers an unfiltered, "*insider*" perspective on organizational environments, as viewed by current and former employees (Gimpl, 2025; Querbach et al., 2022). Its utility extends beyond job seekers, making it a valuable source for academic research, especially for examining employee sentiment and organizational reputation (Kock et al., 2025). The anonymous reviews on Glassdoor cover a wide range of organizational dimensions, including workplace culture, management practices, compensation and CEO approval. The platform's extensive user-generated content and broad coverage of industries and firm sizes have led to its growing adoption in empirical studies (Pun et al., 2025). This aligns with the understanding that effective job matching, and a satisfied workforce can reduce employee turnover costs, thereby allowing firms to allocate more resources toward development (Koenraadt & Timmermans, 2025). Yet, despite its utility, a significant research gap persists, there is a scarcity of studies that examine how internal stakeholders perceive corporate initiatives and their resulting impacts (Li et al., 2025).

While existing research utilizing Glassdoor data primarily focuses on firms in developed countries, particularly North America and Europe (Querbach et al., 2022), there is a notable dearth of comparable studies in Asia. To address this geographical imbalance, our study will focus specifically on Malaysia, an under-researched area (Pun et al., 2025). We aim to explore the relationship between employee satisfaction and firm performance using Glassdoor data to contribute a much-needed perspective from an Asian context. The remainder of this paper will review the relevant literature, explain the methodology, present and discuss our findings and conclude the study.

2. LITERATURE REVIEW

The emergence of digital platforms has transformed the landscape of employee feedback, making it a public and accessible indicator of organizational health (Höllig, 2021). Consequently, the intersection between employee sentiment and corporate performance has become a prominent area of scholarly inquiry. A growing body of literature, including studies by Cloos (2021) and Filbeck et al. (2022), emphasizes that employee satisfaction is a significant determinant of firm performance. Using employee reviews from Glassdoor as a primary data source, numerous studies have provided consistent empirical evidence linking internal employee sentiment to a range of financial and operational outcomes (Morgan & Chapman, 2024; Chi & Chen, 2021). Research in this area predominantly employs a quantitative research design, leveraging large datasets from Glassdoor in conjunction with financial databases like Compustat and BoardEx (Huang et al., 2015; Hales et al., 2018). Common analytical methodologies include ordinary least squares regression, panel data analysis and GMM models, with the majority of studies focusing on the United States (Khavis & Krishnan, 2021; Hope et al., 2021). As such, Huang et al. (2015) analysed over 100,000 reviews from 993 U.S. public firms, while Hales et al. (2018) examined over 150,000 reviews from S&P 1,500 firms. Both studies confirmed that employee sentiment significantly predicts future firm performance, reinforcing the value of this crowdsourced data as a forward-looking indicator of firm health.

Consistent with the happy productive worker hypothesis (Kessler et al., 2020), studies have found a strong positive correlation between higher employee satisfaction on Glassdoor and improved firm performance (Welch & Yoon, 2023; Barnes & Cheng, 2023). Accordingly, Huang et al. (2019) further demonstrated that average employee outlook can predict future operating outcomes, while Farhadi and Nanda (2021) showed a link between positive employee sentiment pre-IPO and stronger post-IPO returns. These findings collectively suggest that Glassdoor ratings can serve as leading indicators of firm value, extending beyond traditional financial metrics. To compare, Hales et al. (2018), for instance, found that reviews from current employees are more predictive than those from former employees and Huang et al. (2015) identified that the relationship can be influenced by firm type, such as founder-led versus non-family firms.

2.1 Employee Voices Channel

A growing body of research demonstrated a strong link between employee satisfaction and tangible economic benefits for firms. Studies showed that enhanced employee satisfaction was associated with a reduced cost of equity and corporate borrowing (Fu et al., 2020; Chi & Chen, 2021). These findings were supported by Başar (2024) and Bellet et al. (2024), who found a direct correlation between employee satisfaction and both firm performance and individual productivity. Carter et al. (2021) suggested that a positive work environment, characterized by opportunities for growth, equitable compensation and fair performance evaluation, was a key driver of this satisfaction. Subsequently, these results implied that financial markets responded favourably to firms with better internal workplace perceptions, translating positive employee sentiment into tangible economic benefits.

The effect of work-life balance (WLB) on performance was more precise and appeared to be context-dependent. Hope et al. (2021) identified a non-linear relationship in the context of financial analysts, where a moderate level of WLB improved performance, but an excessive amount had a detrimental effect. In contrast, Khavis et al. (2022) reported a consistently positive effect of WLB on audit quality. These differing results suggested that the impact of WLB varied across different professional roles, with analytical positions potentially benefiting from some pressure, while audit roles gained more from stability and balance. Moreover, recent studies also began to explore the connection between Environmental, Social and Governance (ESG) performance and employee sentiment captured on platforms like Glassdoor (Welch & Yoon, 2023; Barnes & Cheng, 2023). These findings indicated that firms with high ESG scores and competent senior management tended to receive better employee ratings and exhibited superior stock performance. Lindsey et al. (2024) further suggested that firms with higher ESG scores, which often included employee satisfaction metrics, demonstrated more robust financial performance and a positive correlation with stock returns. This research supported the idea that well-managed ESG initiatives not only enhanced external valuation but also fostered stronger engagement among internal stakeholders.

Table 1: Past studies on Employee Voices Channel

Author(s) & Year	Research Objective / Contribution	Key Variables Measured	Major Findings & Hypotheses Tested	Methodology & Data	Limitations & Future Research
Huang et al. (2015)	To determine if employee reviews on Glassdoor predict firm performance and identify moderating factors.	Independent: Employee sentiment (from Glassdoor reviews) Dependent: Future firm performance (e.g., profitability)	Employee sentiment significantly predicts future firm performance. Hypothesis: Firm type (founder-led vs. non-family) moderates the relationship.	Quantitative, OLS regression. Data: 102,888 reviews from 993 U.S. public firms.	Focused on a single country (U.S.). Limited to quantitative analysis.
Hales et al. (2018)	To assess the predictive power of employee reviews, distinguishing between current and former employees.	Independent: Current vs. former employee reviews Dependent: Future firm performance	Employee sentiment significantly predicts future firm performance. Current employee reviews are more predictive than those from former employees.	Quantitative, panel data analysis. Data: 158,352 reviews from 1,265 S&P 1,500 firms.	Concentrated on large U.S. firms. Did not explore other potential moderating factors.

Farhadi & Nanda (2021)	To link pre-IPO employee sentiment on Glassdoor to post-IPO returns.	Independent: Employee sentiment before IPO Dependent: Post-IPO returns	Positive employee sentiment pre-IPO is linked to stronger post-IPO returns.	Employee sentiment data pre-IPO.	Limited to the IPO context. Did not examine long-term firm performance.
Chi & Chen (2021)	To investigate the relationship between employee satisfaction and the cost of corporate borrowing.	Independent: Employee satisfaction Dependent: Cost of corporate borrowing	Enhanced employee satisfaction is associated with a reduced cost of corporate borrowing.	N/A	Focused on borrowing costs. Did not explore other financial market outcomes.
Fu et al. (2020)	To examine the association between employee satisfaction and a firm's cost of equity.	Independent: Employee satisfaction Dependent: Cost of equity	Enhanced employee satisfaction is associated with a reduced cost of equity.	N/A	Limited to the cost of equity. Did not analyze other aspects of firm value.
Hope et al. (2021)	To explore the relationship between work-life balance (WLB) and financial analyst performance.	Independent: Work-life balance Dependent: Analyst performance	Found a non-linear link: moderate WLB improves performance, while excessive WLB reduces it.	N/A	Focused exclusively on financial analysts. Findings may not generalize to other roles.
Khavis et al. (2022)	To study the effect of work-life balance (WLB) on audit quality.	Independent: Work-life balance Dependent: Audit quality	Reported a consistently positive effect of WLB on audit quality.	N/A	Limited to the audit profession. Did not compare findings to other roles.
Welch & Yoon (2023); Barnes & Cheng (2023)	To link ESG performance and senior management competence to employee ratings and stock performance.	Independent: ESG scores, senior management competence Dependent: Employee ratings, stock performance	Firms with high ESG scores and competent senior management have better employee ratings and superior stock performance.	N/A	Did not establish causality. Focused on a high-level correlation.
Lindsey et al. (2024)	To demonstrate the correlation between ESG scores and robust financial performance.	Independent: ESG scores (including employee satisfaction metrics) Dependent: Financial performance, stock returns	Firms with higher ESG scores show more robust financial performance and a positive correlation with stock returns.	N/A	Broader in scope than the other studies. Did not explore the specific mechanism of the relationship.

Table 1 shows that the primary argument across multiple studies was that employee sentiment on Glassdoor acted as a forward-looking indicator of firm value. Studies by Huang et al. (2015) and Hales et al. (2018) provided robust quantitative evidence to this effect, both using large North America datasets. While both studies concluded that higher employee satisfaction predicted superior firm performance, they diverged on specific moderating factors. In addition, Hales et al. (2018) emphasized the importance of the employee's status, finding that reviews from current employees were more predictive than those from former employees. To compare, Huang et al. (2015) focused on firm characteristics, suggested that the value of online reviews was not universal but depended on the source and the corporate structure.

Additionally, the predictive nature of these reviews was further supported by studies on specific financial outcomes. Chi & Chen (2021) and Fu et al. (2020) moved beyond general performance metrics to a more grounded analysis, demonstrating that enhanced employee satisfaction was associated with a reduced cost of corporate borrowing and equity. These findings, along with Farhadi and Nanda’s (2021) discovery that positive pre-IPO sentiment correlated with stronger post-IPO returns, collectively implied that financial markets actively incorporated employee sentiment into their valuation models.

Furthermore, recent research had started to link employee sentiment with a firm's ESG performance. Studies by Welch & Yoon (2023) and Barnes & Cheng (2023) indicated that firms with strong ESG scores and competent senior management tended to receive better employee ratings. This suggested a virtuous cycle where positive ESG initiatives fostered a better internal environment, which in turn led to higher employee satisfaction and subsequently, superior stock performance. It framed employee voice not just as an indicator of internal health, but also as a reflection of a company's commitment to social good, which financial markets were increasingly valuing.

2.2 Hypothesis Development

Past studies revealed several critical gaps in the literature. While a consensus existed that employee satisfaction was beneficial to firm outcomes (Başar, 2024), there was significant divergence on what specific aspects of satisfaction mattered most (Cloos, 2021), under what conditions they were most influential and how these effects were best measured (Dube & Zhu, 2021). The differences in findings highlighted the need to consider factors like industry context, specific job roles and distinct satisfaction dimensions when interpreting employee sentiment data. Therefore, a significant lack of qualitative insights existed, which prevented a deeper understanding of how firms responded to online feedback and how employees perceived these corporate responses. This gap meant that quantitative analyses alone could not capture the crucial context needed for a complete understanding.

Meanwhile, prior studies emphasize that employee satisfaction has been widely recognized as a central driver of both financial and organizational outcomes. Fu et al. (2020) and Chi and Chen (2021) demonstrate that higher employee satisfaction lowers the cost of equity and borrowing, thereby improving firms' financing efficiency. Similarly, Başar (2024) and Bellet et al. (2024) found that employee satisfaction enhances both firm performance and individual productivity. These findings underscore that satisfied employees contribute directly to firm success, which in turn is valued by capital markets. To compare, the workplace environment plays a critical role in sustaining employee satisfaction. According to Carter et al. (2021), organizations that provide growth opportunities, equitable compensation and fair performance evaluation foster positive employee perceptions, which in turn strengthen satisfaction.

Meanwhile, another important factor that shaped employee outcomes was WLB (Hope et al., 2021; Khavis et al., 2022). For instance, Hope et al. (2021) reported a non-linear effect, where moderate WLB improved analyst performance but excessive WLB diminished it. To compare, another literature found that WLB consistently improved audit quality (Khavis et al., 2022). These findings highlighted that the impact of WLB was context-dependent, with different roles requiring different balances between work intensity and stability. Integrating these perspectives, this study proposes that a supportive firm environment fosters employee satisfaction, which then translates into financial and organizational benefits. Therefore, our hypothesis as below:

H1(a): Employee satisfaction is positively associated with firm performance.
H1(b): Employee satisfaction is negatively associated with firm performance.

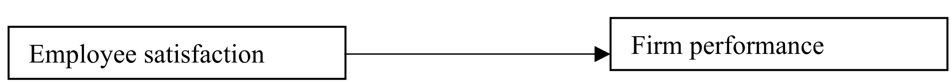

Figure 1: Conceptual Framework

Figure 1 shows the conceptual framework between employee satisfaction and firm performance (Başar, 2024; Bellet et al., 2024; Fu et al., 2020; Chi & Chen, 2021; Dube & Zhu, 2021). As shown, employee satisfaction plays a central role in enhancing firm performance. Prior studies argued that when employees feel valued, motivated and fairly treated, they are more productive and committed, which directly contributes to organizational efficiency and competitiveness. Therefore, by keeping employees satisfied, enabling a healthy balance between work and personal life and building a positive corporate image, firms are more likely to achieve superior performance.

2.3 Literature Gaps

The rapid growth of employee review platforms such as Glassdoor has provided scholars and practitioners with new opportunities to understand the relationship between workplace perceptions and firm outcomes. Hence, this study pursued three primary objectives: (a) to identify, categorize and synthesize empirical studies that examine the relationship between employee reviews on the Glassdoor platform and firm performance; and (b) to explore the methodological approaches and key variables employed in this line of research concerning Glassdoor-based evidence and firm performance via meta-analytic review. Despite the broad scope of employee voice research, this review was limited only to the disciplines of accounting and finance to ensure theoretical and methodological relevance.

Besides that, the literature to date provides strong support for the notion that employee satisfaction enhances firm outcomes (Başar, 2024). However, studies diverge on which aspects of satisfaction are most influential (Cloos, 2021), under what organizational or institutional conditions these effects are amplified or diminished and the mechanisms through which satisfaction impacts performance (Dube & Zhu, 2021). Such differences suggest that industry context, job roles, and satisfaction dimensions must be carefully considered when interpreting employee sentiment data derived from online platforms. Moreover, while Glassdoor reviews have demonstrated predictive power in anticipating firm-level outcomes, significant research gaps remain such as not much limiting generalizability to ASEAN economies and other developing contexts.

3. METHODOLOGY

Guided by the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)** framework, this study adopted a systematic review and meta-analytic approach to synthesize existing evidence on the relationship between employee voices, particularly through the Glassdoor platform and firm performance. The PRISMA flow diagram was employed to ensure transparency, reproducibility, and rigor throughout the review process (Figure 2).

The search phase commenced with the development of keyword strings across all searchable fields (title, abstract, keywords, and full text). The combinations included: *"Glassdoor AND firm performance," "employee satisfaction AND firm performance," "online reviews AND firm performance"*. These searches were conducted exclusively using the Scopus database, covering the publication period between 2015 and 2023. The choice of Scopus over other databases (such as EBSCOhost, Science Direct, ProQuest, Web of Science, ACM Digital Library and Google Scholar) was made due to its availability and accessibility at Perpustakaan Sultanah Nur Zahirah, Universiti Malaysia Terengganu, Malaysia and its comprehensive indexing of high-quality peer-reviewed journals. The year 2015 was selected as the starting point because it marks the period when Glassdoor reviews began to gain traction as an accessible dataset for organizational and financial research, particularly in the North America. The cut-off points of 2023 ensured the inclusion of the most recent, peer-reviewed studies available at the time of analysis. Only articles published in English and with full-text availability were included to facilitate in-depth critical review, which nine peer-reviewed studies (Table 2).

Hence, for this study, the researchers employ a **meta-analytic review approach** to systematically evaluate the extent to which employee voices matter in the context of finance. Compared to narrative reviews, which are often non-transparent, subjective, and susceptible to bias, meta-analysis provides a more objective and replicable method by integrating quantitative findings across multiple studies. Through a meta-analytic review, studies had to report effect sizes or sufficient statistical information (for instance, correlations, means, standard deviations, t-values, F-values) to allow for the calculation of standardized effect size estimates.

3.1 Sample

Following the main research objective to identify, categorize and synthesize empirical studies on the relationship between employee reviews and firm performance, only publications that met these criteria were retained. First, a total of 40 articles categorized as conference proceedings, dissertations, and working papers were excluded. Citation trails were checked to capture additional contributions, and both forward and backward searches were conducted to ensure compliance with the search protocol. The eligibility screening required that studies (1) use Glassdoor employee reviews as a primary variable, (2) examine firm performance as an outcome measure and (3) be empirical, peer-reviewed articles published from 2015 onwards. Since firm performance can be measured with multiple indicators, this review was restricted to studies within management, business, accounting, and finance to ensure relevance and methodological consistency. Titles and abstracts were screened, followed by full-text reviews, and only studies with quantifiable data linking employee reviews to firm performance were retained. Data extraction covered publication year, country, method, sample size, data source and key findings (Khan et al., 2003; Sauer & Seuring, 2023). Next, the meta-analytics review using a fixed-effects model and a random-effects model applied. Lastly, to complement the systematic review, a narrative synthesis was conducted to integrate **PRISMA** framework with thematic insights from the meta-analytics review findings.

4. FINDINGS

4.1 Descriptive Analysis

Meta-analytic procedures were carried out using established software (for instance, Comprehensive Meta-Analysis [CMA] or R packages). For the findings, the researchers utilize the effect sizes to calculate overall mean effects and 95% confidence intervals. At the same time, heterogeneity was assessed using **Q-statistics** and the **I² index,** and moderator analyses were performed to examine whether contextual variables (e.g., industry, region, governance mechanisms) influenced the strength of the employee voice–finance relationship. This study started with Forest Plot of Fixed Model (Figure 3).

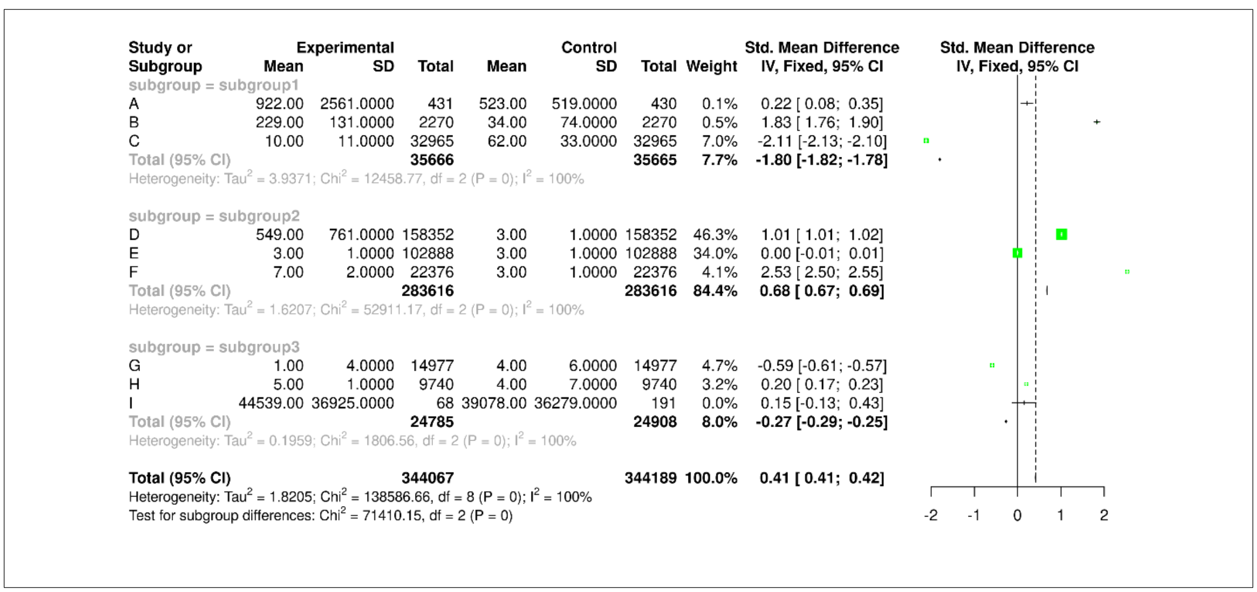

Figure 3: Forest Plot of Fixed Model

Table 2: Systematic Literature Review of Research Trends

No.	Author (s) and year	Country	Publisher	Sample	Dependent Variable	Independent Variable	Sample size	Design	Data collection method	Analysis technique	Key findings or result
1	Huang et al. (2015)	United States	*Journal of Corporate Finance*	U.S. public firms (S&P 1500); employee reviews from Glassdoor	Glassdoor	Firms performance	102,888 employee satisfaction reports from 993 firms (2018-2012)	Quantitative	Secondary data: 1.Glassdoor employee reviews (2008-2012) 2.Compustat 3.Execucomp 4.BoardEx 5.CRSP	-Two-stage Heckman correction -Propensity score matching -Two-stage Least Squares (2SLS) -Dynamic GMM	● Higher satisfaction in founder firms compared to non-family firms ● Scion firms show no significant difference in satisfaction compared to non-family firms ● Employee satisfaction predicts firm performance
2	Hales et al. (2018)	United States	*Accounting, Organizations and Society*	Employees reviews from Glassdoor for S&P 1500 firms	Glassdoor	Firms performance	158,352 reviews from 1,265 companies (May 2012-June 2015)	Quantitative, empirical study	Secondary data: 1. Glassdoor.com reviews 2. Compustat 3. CRSP	-Factor analysis -OLS regression -Logistic regression	● Employee opinions predict future firm performance and disclosures ● Positive employee outlook predicts future sales, margins, earnings surprises ● Glassdoor reviews act as an alternative voluntary disclosure channel ● Current employees' opinions are more predictive than former employees'
3	Huang et al. (2019)	United States	*Journal of Accounting, Auditing & Finance*	U.S. public firms listed in Compustat with reviews from Glassdoor.com	Glassdoor	Firms performance	572,262 individual employee predictions from 2,270 public firms covering 21,763 firm-quarters (2012-2016)	Quantitative: Cross-sectional and panel regression models	Secondary data: 1.Glassdoor 2.Compustat 3.CRSP 4.I/B/E/S 5.Seeking Alpha	-Ordinary least squares (OLS) regression -Probit models -Fama-MacBeth regressions Portfolio analysis	● Average employee outlook predicts future operating performance ● Employee outlook is a stronger predictor of bad news than good news ● Investors do not fully incorporate employee outlook information, leading to predictable market returns
4	Yoojin et al. (2020)	United States	*Journal of Accounting Research*	S&P 500 firms	Glassdoor	Firms performance	495 firms (from 500 in the S&P 500)	Difference-in-differences (DID)	Scraped ratings from Glassdoor.com	Generalized difference-in-differences regressions	● Tax avoidance news negatively affects employee perceptions of managers and firms
5	Chi and Chen (2021)	China	*Finance Research Letter*	U.S. listed firms	Glassdoor	Firms performance	971 firms; 2,270 firm-year observation;	Quantitative: Dynamic Panel Data Analysis	Secondary data from:	-Pooled OLS -Fixed Effects Model	● Higher employee satisfaction is significantly associated with lower cost

							644,280 employee reviews from Glassdoor		1.Glasdoor.com (employee reviews) 2.Compustat (firm financials) 3.DealScan (loan data)	-Two-step System GMM estimator	of corporate borrowing; reslut robust across models
6	Dube and Zhu (2021)	United States	*Journal of Accounting Research*	U.S listed firms covered by MSCI ESG KLD STATS database	Glassdoor	Firms performance	32,965 firms firm-year observations for 3,049 unique firms	Difference-in-differences (DID)	Glassdoor reviews	-Generalized DID design -Propensity score matching -Falsification test	● Firms improve workplace practices after reviews ● Improvements are stronger in firms with negative initial reviews and high labour intensity
7	Khavis and Krishnan (2021)	United States	*Auditing: A Journal of Practice & Theory*	Employee reviews from accounting firms (Glassdoor) and audit quality data	Glassdoor	Firms performance	1.Glassdoor: 140 firms (2008-2016) 19,673 employee reviews 2.Audit data: 22,376 client-year observations, 4,788 unique clients, 64 unique auditors	Quantitative: Cross-sectional, firm-year level analysis	Secondary data: 1. Glassdoor.com reviews 2. Compustat 3. Audit Analytics	-OLS regression - Logistic regression	● Work-life balance improves audit quality ● Overall satisfaction is not linked to audit quality ● Career opportunities, senior management, and firm culture matter more than compensation or work-life balance ● Big 4 firms rated better overall but worse for work-life balance
8	Barnes and Cheng (2023)	United States	*Journal of Corporate Finance*	Firm listed on Glassdoor's "Top CEOs by Employees' Choice" list	Glassdoor	Firms performance	431 firm-year observations (2013-2018)	Quasi-Experimental: Regression Discontinuity (RD) Design	-Manual Scraping from Glassdoor (Wayback Machine) -Financial data from Compustat, CRSP, ISS -Inventor data from USPTO	-Portfolio Analysis (Fama-French six-factor model, Fama-MacBeth regressions) -Regression Discontinuity (RD) analysis -Robustness tests.	● Firms with award-winning CEOs see 4.4%-9.1% higher stock returns annually ● Return on Assets (ROA) increases by about 6% ● Employee efficiency rises by 26% ● Firms attract higher-quality employees and more customers ● No significant increase in M&A activities or excessive operational costs
9	Welch and Yoon (2023)	United States	*Journal of Financial Economics (JFE),* 2023	U.S. publicly traded firms evaluated based on employee opinions (Glassdoor) and ESG performance (MSCI ESG Ratings)	Glassdoor	Firms performance	9,740 firm-year observations (2011-2018)	Empirical study: Calendar-time portfolio regression design (double-sorted portfolios	-Employee opinion data from Glassdoor -ESG performance ratings from MSCI ESG Ratings	-Calendar-time portfolio regressions (using Fama-French Five Factor Model)	● Firms with high-ability senior managers and high ESG performance earn about 6.5% higher stock returns annually ● These firms also show better ROE growth and

		based on senior management ability and ESG ratings)	-Financial and stock return data from Compustat and CRSP databases	-Fama-MacBeth regressions -Panel regressions with firm and CEO fixed effects -Cross-sectional tests -Validation tests using ROE growth and earnings surprises	more positive earnings surprises ● The positive effect is stronger in larger firms ● Managerial ability is critical for ESG investments to increase shareholder value

The results of this Figure 3 demonstrate that employee voices play a significant role in shaping financial outcomes, though the strength and direction of the relationship vary across contexts. The overall effect size (SMD = 0.41) indicates a robust and positive association, suggesting that when employees are given the opportunity to express their opinions, organizations can benefit financially. This aligns with theoretical perspectives such as stakeholder theory and resource-based view (RBV)**,** which posit that empowering employees enhances organizational knowledge, innovation, and commitment, thereby improving performance.

However, the subgroup analyses highlight some questions. While some studies (subgroup 1) reported negative associations, others (subgroup 2) revealed strong positive effects, and a third group (subgroup 3) suggested only marginal or negative associations. This variability indicates that the impact of employee voice is not universal but rather shaped by institutional, cultural and organizational factors. As such, industries with rigid hierarchies or weak governance mechanisms may not fully capitalize on employee input, leading to weaker or even adverse outcomes. In contrast, organizations with strong participatory cultures and inclusive leadership are more likely to realize the financial benefits of employee engagement.

Additionally, the significant heterogeneity across studies ($I^2 = 100\%$) underscores the complexity of this relationship and points to the need for further exploration of moderating variables, such as firm size, market competition, governance structures and national cultural dimensions. Moreover, the presence of negative or null effects in some contexts challenges the assumption that employee voice is always beneficial, highlighting the importance of context-sensitive implementation. Therefore, the findings confirm that employee voices generally have a positive impact on financial outcomes, but the strength and direction of this effect vary across organizational and institutional contexts supported by H1(a).

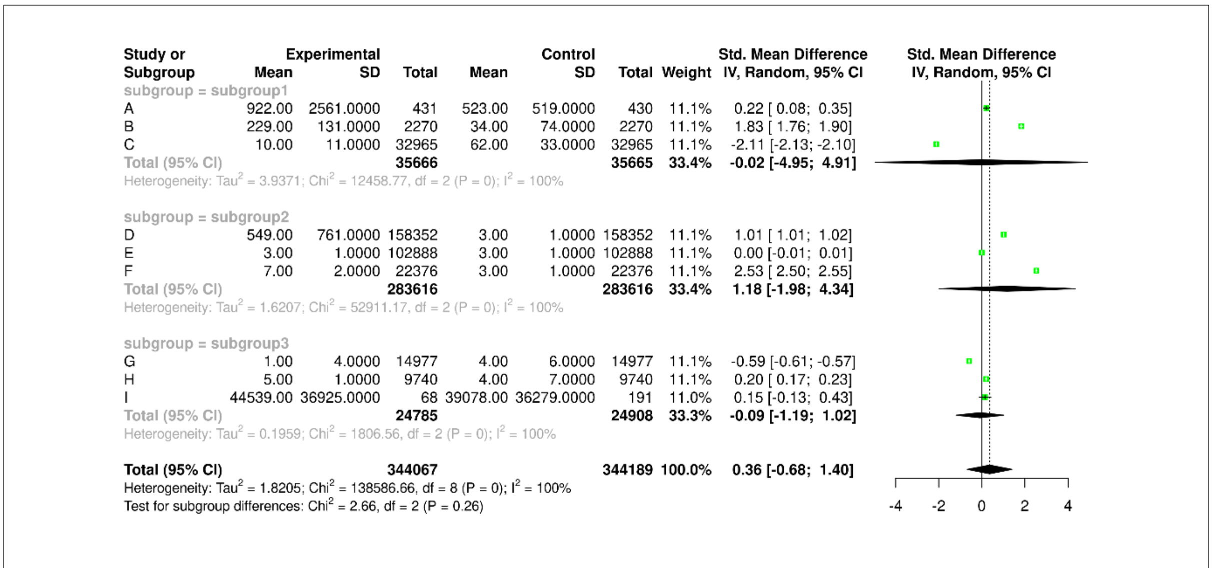

Figure 4: Forest Plot of Random Model

Furthermore, Figure 4 shows the Forest Plot of Random Model. The random-effects meta-analysis, based on data observations, revealed an overall positive but modest effect size (SMD = 0.36, 95% CI: –0.68 to 1.40)**,** suggesting that employee voices are generally associated with favorable financial outcomes, though the effect varies considerably across studies. Subgroup analyses showed mixed results: subgroup 1 (Studies A–C) reported a negligible effect (SMD = –0.02), subgroup 2 (Studies D–F) demonstrated a stronger positive effect (SMD = 1.18), while subgroup 3 (Studies G–I) indicated a weak and non-significant relationship (SMD = –0.09). The high heterogeneity (I^2 = 100%) underscores substantial variability across contexts, implying that the influence of employee voice on finance is contingent upon factors such as organizational setting, governance structures and industry dynamics, therefore implied H1(b) duly supported.

As such, the results from both the fixed-effects (Figure 3) and random-effects models (Figure 4) provide valuable insights into the impact of employee voices on financial outcomes, though they differ in magnitude and interpretation. Under the fixed-effects model, the pooled results indicated a moderate and consistent positive relationship, suggesting that employee voices are reliably associated with improved financial performance across the included studies. In contrast, the random-effects model, which accounts for variability across contexts, produced a smaller and less precise overall effect reflecting substantial heterogeneity (I^2 = 100%). Together, these findings suggest that employee voices do matter in finance, but their impact is shaped by underlying contextual moderators.

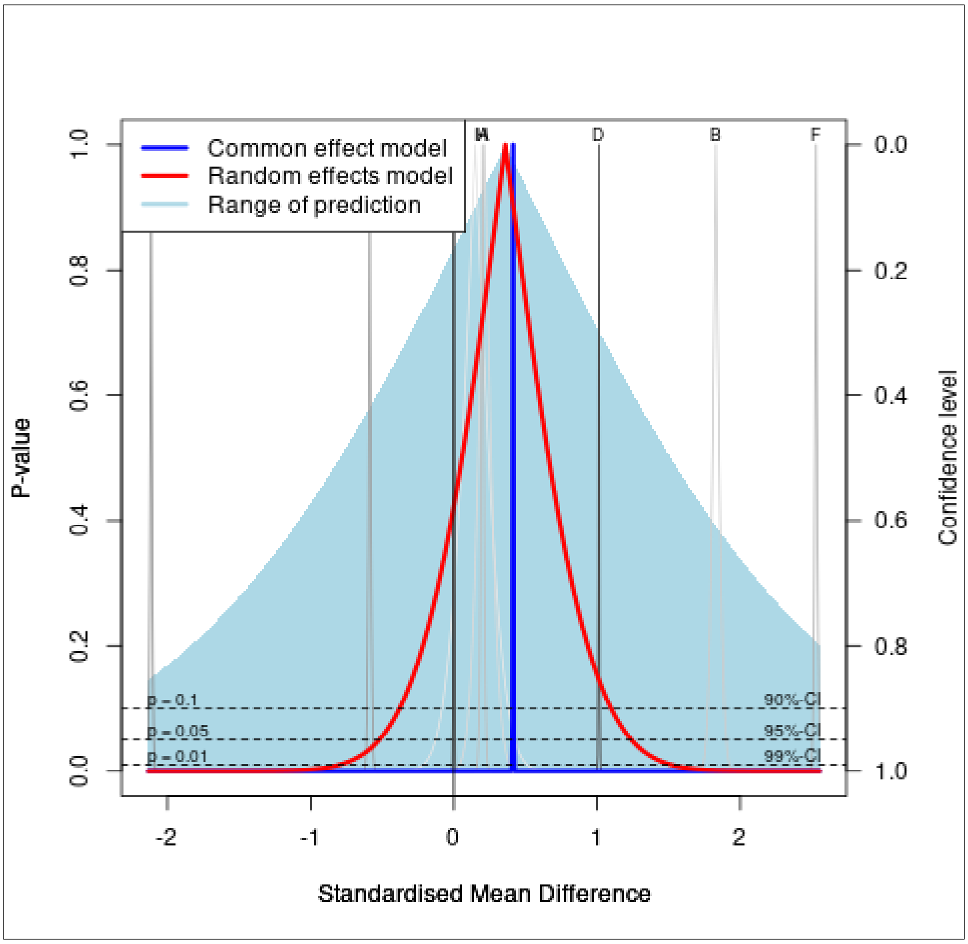

Figure 5: Drapery Plot

The study also illustrate the drapery plot that employee voice has a generally positive and significant impact within financial contexts (Figure 5). We can see that the figure highlights that both the common effect model (red curve) and the random effects model (blue curve) converge around a positive standardized mean difference, suggesting that employee voice consistently contributes to favorable outcomes across studies. The shaded prediction range further shows that while some variability exists, the overall effects remain within a positive domain, reinforcing the robustness of the relationship. Confidence intervals at the 90%, 95%, and 99% levels indicate strong statistical reliability, implying that the influence of employee voice is not only significant but also stable across different financial settings.

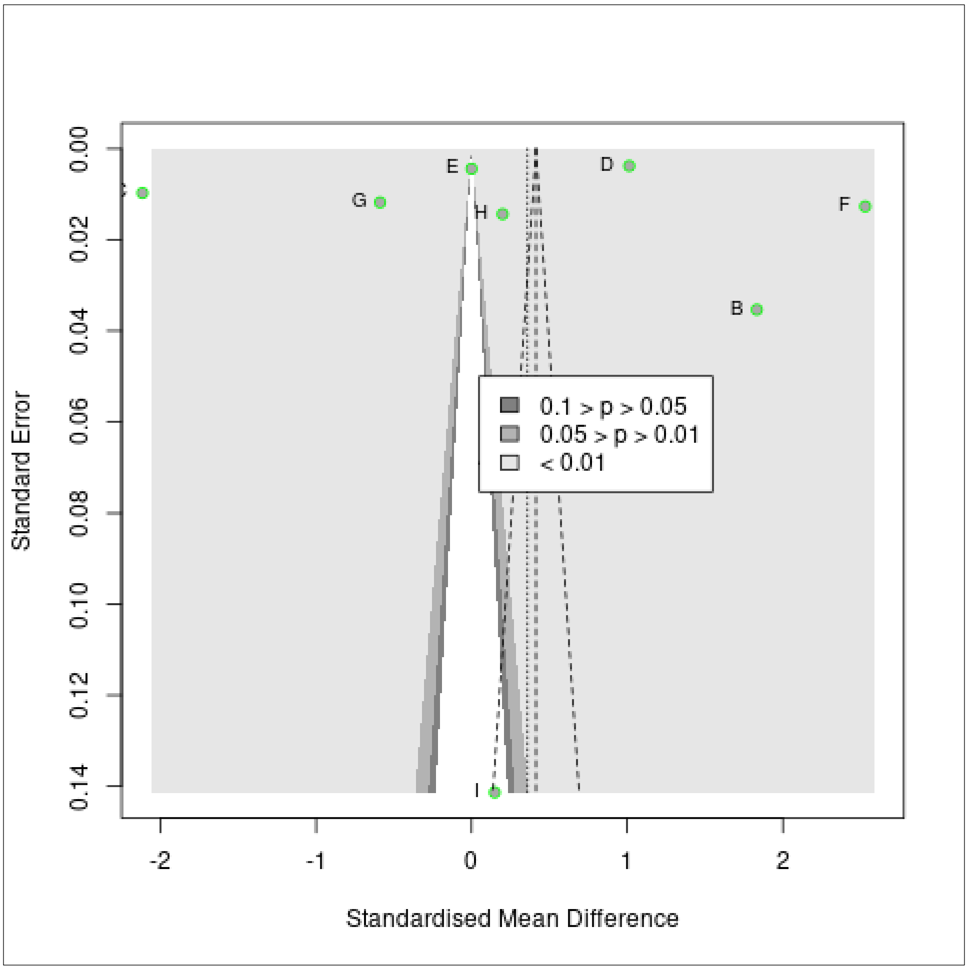

Figure 6: Funnel Plot (Trim and Fill)

Moreover, Figure 6 indicates the Funnel Plot (Trim and Fill). The researchers show that the distribution of studies is generally symmetrical around the mean effect size, suggesting limited evidence of publication bias of the study. The standardized mean differences cluster near zero but lean positively, showing that employee voice tends to contribute beneficial outcomes in financial settings. The placement of studies within the shaded regions and the narrow spread of standard errors reinforce the statistical significance of these effects, with most results falling below the $p < 0.05$ threshold. Importantly, the trim-and-fill method suggests that even after accounting for potentially missing studies, the overall hypothesis (H1(a) and H1(b) remains unchanged, employee voices do matter in finance, consistently showing positive influence across the reviewed literature.

5. CONCLUSION

This meta-analytic review explores the employee voices do matter in finance, as evidenced by the consistent positive association between corporate performance and employee evaluations across the examined studies. The findings suggest that both fixed and random-effects models outcomes tend to align with higher levels of employee satisfaction, work-life balance and organizational reputation, underscoring the meaningful role of workplace perceptions in reflecting firm success. While the magnitude of the relationship varies across contexts, these results highlight the importance of employee voice as a valuable lens for understanding organizational health and performance. For future research, this study advances the growing recognition that employee perspectives are not peripheral, but central, to understanding and sustaining corporate performance in the financial domain.

ACKNOWLEDGEMENT

This research was supported by Universiti Malaysia Terengganu and Ministry of Higher Education (MOHE) Malaysia through the Fundamental Research Grant Scheme-Early Career (FRGS-EC/1/2024/SS01/UMT/02/14: SO Code. No. 59810).

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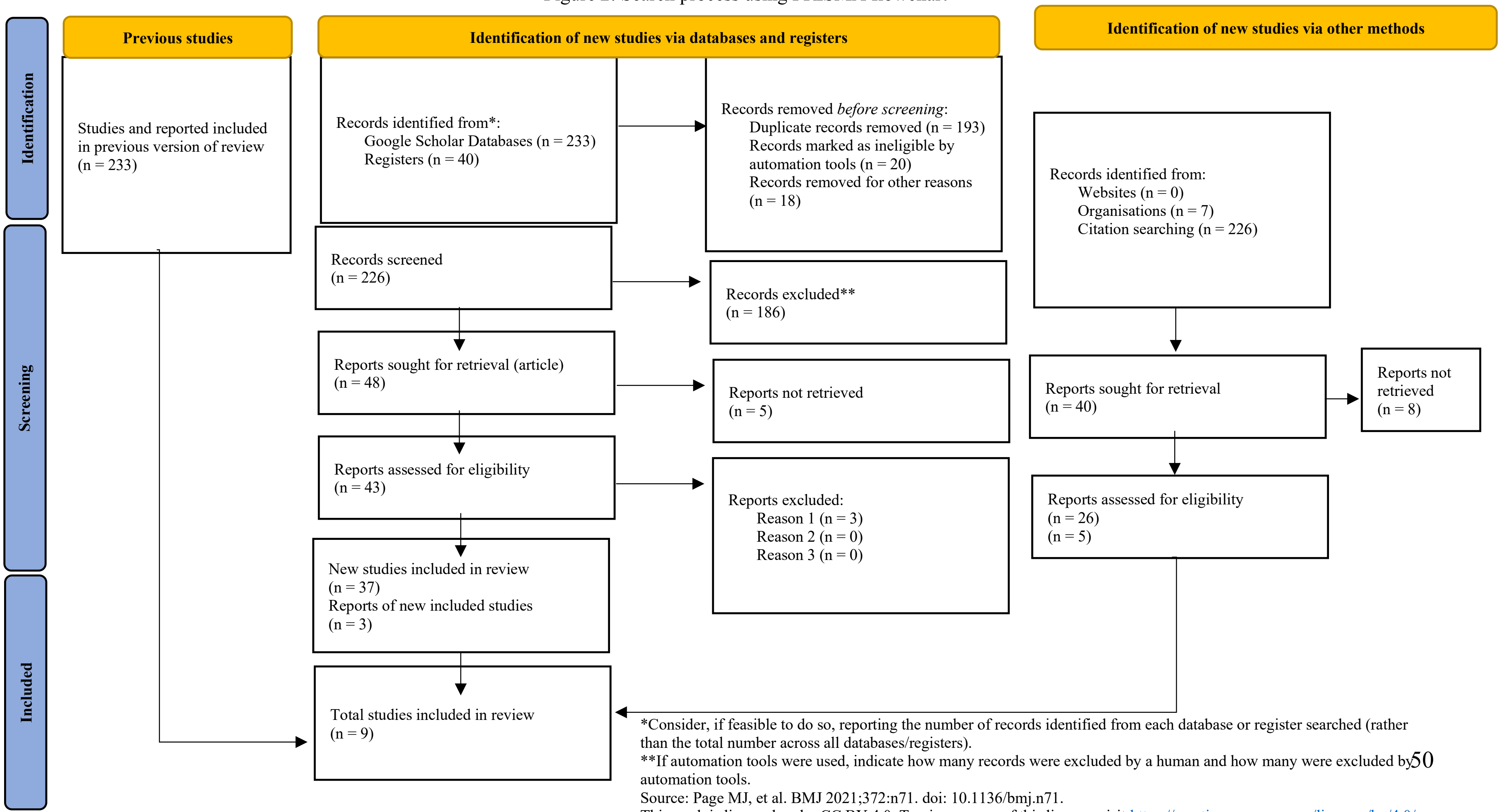
APPENDIX

Figure 2: Search process using PRISMA flowchart



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.
Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

Paper ID: 07

Linking Classroom to Practice: Student Reflections on Financial Ratio Analysis

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Abstract

Teaching excellence in accounting education requires creating authentic learning experiences that bridge the gap between theory and professional practice. This paper explores undergraduate students' qualitative feedback on a consultancy-style financial ratio analysis project, designed to simulate real-world investment advisory tasks in a Financial Accounting and Reporting II course. The project required students to analyse annual reports of two Malaysian public listed companies, compute and interpret financial ratios, and provide an investment recommendation in a consultant-style report. Open-ended survey responses from 81 students were analysed thematically to capture their challenges, suggestions for improvement, and reflections on the value of the learning experience. Findings revealed that students faced difficulties in interpreting financial data, moving from computation to meaningful analysis, and producing professional reports. Teamwork and time management also emerged as secondary challenges. Students suggested clearer guidelines, sample templates, progressive feedback, and additional learning tools to improve the project's effectiveness. Despite these challenges, students valued the authenticity of the task, the use of real company data, and the role-play element, which enhanced engagement, critical thinking, and confidence. The paper contributes to the discourse on teaching excellence in accounting by amplifying student voices and offering practical insights for designing experiential learning projects.

Keywords
Teaching Excellence, Qualitative Feedback, Experiential Learning, Financial Ratio Analysis

1. INTRODUCTION

Teaching excellence is increasingly emphasized in higher education, particularly within professional programs such as accounting, where graduates are expected to master both technical and transferable skills (Devlin & Samarawickrema, 2010). In today's globalized and competitive environment, accounting educators face the dual challenge of equipping students with technical competencies in areas such as financial reporting and analysis, while also cultivating critical thinking, problem-solving, communication, and decision-making skills that are highly valued by employers (Jackling & De Lange, 2009; Kavanagh & Drennan, 2008). Traditional lecture-based instruction, while effective for conveying foundational concepts, has often been criticized for encouraging rote memorization and formulaic application of knowledge, with limited opportunities for students to engage in authentic, practice-oriented tasks (Ballantine & McCourt Larres, 2009).

Within financial accounting education, ratio analysis represents a core area that illustrates this tension. Students are typically trained to compute ratios, yet many struggle to interpret their meaning, compare performance across companies, and translate numerical outputs into actionable business insights (Weil et al., 2004). Employers, on the other hand, expect graduates to demonstrate judgment and professional reasoning when analysing financial performance in real-world contexts (Howieson, 2003). This persistent gap between classroom learning and professional expectations underscores the need for innovative, experiential pedagogies that create meaningful learning experiences and simulate the demands of professional practice (Kolb, 1984; Biggs & Tang, 2011).

One approach that has gained attention in accounting education is the incorporation of authentic assessments, such as consultancy-style projects. These projects provide students with opportunities to engage with real company data, adopt professional roles, and communicate findings to hypothetical clients (Bui & Porter, 2010). Recent studies further show that experiential learning activities that are authentic, detailed, and designed around the experiential learning cycle significantly improve student engagement and help bridge the theory-practice gap (Molendijk, Taplin, & Brennan, 2024; Yusof et al., 2020).

This paper addresses this gap by focusing on students' qualitative feedback on a financial ratio analysis project conducted in a Malaysian public university. The project required students to analyse annual reports from two companies, compute ratios, interpret results, and present an investment recommendation in a consultant-style report. Open-ended survey responses were collected from 81 students to capture their reflections on challenges, suggested improvements, and perceived benefits of the project. By amplifying student voices, this study offers insights into how subject-specific teaching interventions can embody teaching excellence in financial accounting.

2. LITERATURE REVIEW

Teaching excellence in higher education is commonly associated with approaches that enhance student learning, foster engagement, and develop skills relevant for professional practice (Biggs & Tang, 2011; Devlin & Samarawickrema, 2010). In the field of accounting, this goes beyond delivering technical content to creating learning environments that integrate theory with practice and promote transferable skills such as critical thinking, communication, and professional judgment (Jackling & De Lange, 2009; Kavanagh & Drennan, 2008). Accounting educators are therefore called to move away from traditional didactic approaches toward student-centred and experiential strategies that better prepare graduates for the demands of the profession (Guthrie & Parker, 2016).

Experiential learning theory (Kolb, 1984) provides a strong foundation for rethinking accounting pedagogy. According to Kolb, learning occurs most effectively through a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. In accounting education, projects that involve real-world data and professional role-play have been shown to support this cycle by engaging students in authentic tasks that mirror workplace challenges (Yusof et al., 2020). Such activities not only reinforce conceptual understanding but also enhance student motivation and engagement, which are critical dimensions of teaching excellence (Gibbs, 2010).

One pedagogical approach aligned with experiential learning is the use of authentic assessments, such as consultancy-style projects. These tasks simulate professional scenarios and require students to apply knowledge, make decisions, and communicate results in a professional format. Prior studies suggest that authentic assessments foster deep learning and critical evaluation, as students must move beyond formulaic calculation to interpretation and judgment (Davidson & Baldwin, 2005). In addition, role-play has been identified as an effective tool for enhancing reflective learning and professional awareness in accounting contexts (Weil et al., 2001).

Despite these pedagogical advances, students often face challenges when engaging in authentic and complex accounting tasks. Studies have documented difficulties in interpreting financial data, analysing ratios, and producing well-structured written reports (Jackling & De Lange, 2009). These gaps reflect a broader concern in the literature regarding the employability of accounting graduates, who may possess technical knowledge but struggle with communication and higher-order thinking (Howieson, 2014). Scaffolding strategies, such as staged feedback, templates, and exemplars, have been recommended to support students in transitioning from classroom tasks to professional-style assessments (Abraham & Jones, 2016).

While quantitative studies provide evidence of improved learning outcomes from such interventions, fewer studies explore the qualitative perspectives of students. Capturing student voices is crucial for understanding how learners experience these interventions, the specific difficulties they encounter, and the types of support they consider most valuable. This study responds to this gap by analysing open-ended feedback from students who participated in a financial ratio analysis project in Malaysia, thereby contributing new insights into teaching excellence in subject-specific accounting education.

3. METHODOLOGY

This study adopted a qualitative approach to capture students' experiences, challenges, and perceptions of a consultancy-style financial ratio analysis project. While the broader study employed a mixed-method design, this paper focuses exclusively on the qualitative findings derived from open-ended survey questions.

3.1 Context and Participants

The intervention was implemented in a second-year Financial Accounting and Reporting II course at a Malaysian public university during the second semester of the 2024/2025 academic year. A total of 81 students participated in the project and subsequently completed the survey. The cohort included students from the Bachelor of Accounting program as well as those from related disciplines such as Banking, Finance, and Economics. This diversity provided a broad perspective on how students with different academic orientations experienced the project.

3.2 Data Collection

Following completion of the project, students were invited to complete an online survey administered through Google Forms. In addition to closed-ended items, the survey included several open-ended questions designed to elicit reflective feedback. The questions asked students to describe (1) the challenges they faced during the project, (2) suggestions for improving the project for future cohorts, (3) what they found most valuable, and (4) how the project influenced their critical thinking, problem-solving, and teamwork skills. Responses were anonymous to encourage honesty and reduce social desirability bias.

3.3 Data Analysis

The qualitative data were analyzed using thematic analysis, following the guidelines of Braun and Clarke (2006). Responses were first read closely to gain familiarity, then coded inductively to identify recurring ideas and patterns. Codes were subsequently grouped into broader themes representing students' shared experiences, challenges, and recommendations. Representative quotations were selected to illustrate key themes. To enhance trustworthiness, the coding process was reviewed iteratively, and emerging themes were compared against raw data to ensure consistency.

4. FINDINGS

Thematic analysis of the open-ended responses revealed rich insights into students' experiences with the Financial Ratio Analysis Project. The findings are presented under three overarching themes: (1) challenges faced during the project, (2) suggestions for improvement, and (3) perceived value of the learning experience.

4.1 Challenges Faced

A dominant theme emerging from student responses was the difficulty of interpreting financial data from published annual reports. While students were generally able to access the necessary information, many expressed uncertainty about which figures to use for specific ratios. For example, one student explained: *"Sometimes I was confused about which figure to take from the financial statements, for example, whether to use total assets or separate current and non-current assets."* This difficulty was compounded by the complexity of real-world financial reports, which often presented items under multiple classifications or with adjustments. Another student reflected: *"Interpreting raw financial data was initially challenging, especially when the data lacked clarity or consistency. I had to cross-check between different statements to ensure accuracy."*

Another significant challenge is related to ratio calculation and interpretation. Although most students could apply formulas correctly, many admitted that moving from numerical results to meaningful insights was not straightforward. As one respondent noted: *"Applying the formula was not too hard, but interpreting what the ratio meant for company performance was confusing."* Others indicated reliance on group members to validate their calculations, suggesting uneven confidence in this aspect of the task. Students also highlighted report writing as a major obstacle. Transforming technical analysis into a professional, consultant-style report was described as particularly demanding. One student shared: *"The hardest part was writing the report in a professional way. I wasn't sure how to structure it and how to make the results clear for a client."* Similarly, others pointed to the challenge of balancing technical accounting content with clarity and coherence in communication.

In addition, some students reported teamwork and workload issues, including unequal contributions among group members and time constraints. For instance: *"Not all team members did the calculations, so not everyone benefited equally from the project."* Another added: *"It was time-consuming to analyse two years for two companies, especially when we had other assignments at the same time."* Overall, these challenges underscore the gap between technical knowledge and its application in professional-style outputs, highlighting the need for greater scaffolding and support.

4.2 Suggestions for Improvement

Students provided constructive feedback for improving the project design. The most common recommendation was for clearer instructions and guidelines. While the overall objectives were understood, students felt that more detailed directions regarding report structure, ratio requirements, and formatting would reduce confusion. As one student suggested, *"It would help if the instructions were more detailed, especially on what to include in the analysis and report."* Another recurring suggestion was the provision of sample reports or templates to serve as reference points. Many students emphasised that examples of high-quality reports from previous cohorts would help them understand expectations. One response explained, *"Providing an example or template would be a useful guide for how to organize the report."* Students also requested greater support for report writing, such as workshops or templates that outline key sections (introduction, analysis, findings, recommendations).

Relatedly, some recommended reducing the project scope to make it more manageable, for instance by focusing on one company rather than two. A number of students highlighted the need for progressive feedback mechanisms, such as interim submissions, draft reviews, or scheduled consultations. One student commented, *"It would be good to have progress checks with feedback, so we know if we are on the right track."* Finally, students suggested the inclusion of additional tools and resources, such as Excel tutorials, workshops on ratio interpretation, and complementary techniques like vertical and horizontal analysis. This reflects a desire not only for support but also for broader skill development.

4.3 Value of the Project

Despite the challenges, students consistently recognized the value and authenticity of the project. Many highlighted that using real-world company data made the task more meaningful and engaging. One student reflected, *"Working with real company annual reports gave me a clearer picture of how financial analysis works in practice, not just in theory."* The role-playing element was also praised, with students noting that adopting the role of a consultant enhanced their sense of responsibility and professionalism. As one remarked, *"I felt like I was doing the work of an actual consultant. It made the project more serious and engaging."* Students also reported gains in critical thinking and confidence. The requirement to compare two companies and justify investment advice was described as an exercise in judgment and professional reasoning. For example, *"Comparing two companies forced me to think critically about performance, not just calculate ratios."* Finally, some students noted improvements in collaboration and teamwork, despite challenges in workload distribution. Engaging in shared tasks, such as verifying calculations and discussing interpretations, was viewed as beneficial preparation for future professional environments.

5. CONCLUSION

This study set out to explore students' qualitative experiences of a consultancy-style financial ratio analysis project in a Malaysian public university. The project, embedded within a Financial Accounting and Reporting II course, required students to analyse real company annual reports, compute and interpret financial ratios, and present their findings in a professional consultancy-style report. Through the analysis of open-ended survey responses from 81 students, the study sought to capture students' reflections on the challenges they faced, their suggestions for improvement, and the value they derived from the project. The findings revealed that while students appreciated the authenticity and engagement of the project, they encountered significant challenges in interpreting financial data, moving from calculation to interpretation, and communicating their analysis in a professional report. These challenges underscore the gap between technical accounting knowledge and the broader professional competencies expected of graduates. At the same time, students highlighted the value of working with real-world data and adopting the role of consultants, which enhanced their motivation, critical thinking, and sense of responsibility. Their suggestions for clearer guidelines, sample templates, scaffolding, and progressive feedback offer practical insights for refining the design of such interventions.

The implications of this study are twofold. First, it demonstrates that teaching excellence in accounting education requires balancing authenticity with adequate scaffolding. While real-world tasks enrich learning, they must be supported with structured guidance to ensure that students can navigate complexity and derive meaningful insights. Second, the study highlights the importance of student feedback as a tool for curriculum design and professional development, allowing educators to refine teaching interventions in alignment with learner needs.

The study is not without limitations. The findings are based on qualitative feedback from a single cohort in one Malaysian university, which may limit the generalizability of results. Furthermore, the reliance on self-reported reflections may be influenced by individual perceptions and biases. Future research could extend this work by examining similar interventions across different institutions and cultural contexts, or by employing longitudinal designs to track how authentic projects influence graduate employability over time. In conclusion, the Financial Ratio Analysis Project provided a valuable platform for developing both technical and professional skills in financial accounting education. By amplifying student voices, this study contributes to the ongoing discourse on teaching excellence, offering evidence that experiential and authentic assessments can be powerful tools for bridging the gap between classroom learning and professional practice—provided they are implemented with thoughtful scaffolding and support.

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Paper ID: 08

Key Audit Matters: Do Firm Characteristics Matter?

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Abstract

Key Audit Matters (KAMs) highlight areas of significant auditor attention in the audit of financial statements, offering stakeholders deeper insights into audit focus and judgment. This study investigates the types of KAMs disclosed and examines how firm characteristics including size, leverage, profitability and audit firm (Big 4 vs. non-Big 4) influence KAMs disclosure among Malaysian public companies. Using a sample of 100 randomly selected firms listed on the Bursa Malaysia Main Market over the 2018 to 2021 period, the study identifies 747 KAMs related to accounting estimates and 143 unrelated accounting estimate cases. The findings reveal that firm size is positively associated with the number of KAMs disclosed, consistent with the increased audit complexity of larger firms. Profitability (ROA) is negatively associated with KAM disclosure, suggesting that financially stronger firms present lower audit risks. Leverage, while positively related to KAMs, is not statistically significant. Additionally, companies audited by Big 4 firms tend to report fewer KAMs, implying that these auditors may address complex matters more effectively during the audit process. These results indicate the importance of firm-specific and auditor-related factors in shaping KAM disclosures. The study highlights the need for context-sensitive audit regulation and encourages capacity building among non-Big 4 audit firms to enhance audit quality. Future research is recommended to explore the effects of regional, industry and auditor type on KAM disclosure practices.

Keywords
Key Audit Matters, Transparency, Firm Characteristics, Auditor

1. INTRODUCTION

Financial statements serve as a primary source of information regarding a company's financial health, relied upon by a broad range of stakeholders, including investors, creditors, regulators, and the general public. The responsibility for ensuring the accuracy and reliability of these financial statements is placed upon external auditors, whose role is crucial in maintaining trust and confidence in financial markets. With the objective of promoting greater transparency in the auditing process, regulatory bodies and standard-setting organizations such as the International Auditing and Assurance Standards Board (IAASB) have introduced the concept of Key Audit Matters (KAMs). KAMs highlight those areas within the financial statements that the auditor considers to be of utmost significance, often requiring elevated attention and complex professional judgment.

Several empirical studies across different jurisdictions have explored how companies are implementing and disclosing Key Audit Matters (KAMs), along with the various factors including firm characteristics that influence the extent, quality, and readability of these disclosures (Hussin, et al.; Rahaman, Hossain & Bhuiyan, 2022). Their studies found that larger firms tend to disclose more KAMs due to the increased complexity of their operations, which present more areas that require significant auditor attention. In addition, investors of firm with high leverage that exposed with high risk also demand more transparency disclosure of financial information including KAMs.

Further, findings of prior studies indicate that culture does affect auditors' disclosures of KAMs (Kitiwong & Srijunpetch, 2020). The authors found that auditors from a country with strong uncertainty avoidance are more likely to disclose industry-common KAMs which most of companies in the same industry share the similar ones in the first few years of the adoption of KAMs as the consequence of the disclosures of KAMs remains unclear. Thus, to fulfill the gap, this study aims to determine the disclosure practices of KAMs by Malaysian companies and also investigate the effect of firm characteristics on KAMs disclosure.

2.0 LITERATURE REVIEW

2.1 Key Audit Matters (KAMs)

KAMs represent specific areas within an audit that auditors deem particularly significant to the financial statements. The disclosure of KAMs in the auditor's report, providing stakeholders with valuable insights into the audit process and areas of focus. KAMs serve as a means of communicating audit risks and procedures directly to stakeholders. They are highlighted in the auditor's report, providing interested parties with an interface into the audit process and the areas that were of greatest concern to the auditor. Examples of KAMs can range from the valuation of complex financial instruments such as derivatives, assessments of goodwill impairment, evaluations of a company's ability to continue as a going concern, the identification of related party transactions and assessments of revenue recognition policies. For each KAM, the auditor must provide information on how they addressed the associated risks, detailing audit procedures, testing methods, and the evidence obtained.

In Malaysia, external auditors are required to report KAMs for audits of financial statements effective from periods ending on or after 15 December 2016. ACCA (2018) highlighted the benefits of KAMs disclosure to investors as KAMs disclosure would stimulate better governance, support better audit quality, and encourage better corporate reporting in terms of transparency. KAMs disclosure reflects the level of transparency, which is one of the items emphasized in the MCCG Code 2017 (SC, 2017).

Previous studies on KAMs indicate that KAMs have information content (Gold et al., 2020; SC, 2018), however only the high information precision of KAMs has information content. There have been continuous initiatives done by the MIA, MASB, Securities Commission (SC) and other government agencies to uphold the quality of financial reporting in Malaysia. Some initiatives are taken due to ever-changing economic conditions, such as the form of MCCG Code in 2001, the continuous revision of the MCCG Code by the SC, and the full convergence of Malaysian accounting standards to IFRS in 2016. Works have been focused on strengthening the corporate governance mechanisms such as the role of audit committee in financial reporting process, and the role of auditors (internal and external) to enhance the credibility of financial statements (SC, 2017; SC, 2018, MIA, 2012).

A considerable number of studies have been carried out on KAMs from various angles. One of the research streams examines the impact of KAMs disclosures on aspects such as financial reporting quality (Gold et al., 2020; Lau, 2021), investor behavior and market reaction (Moroney, Phang & Xiao, 2020; Altawalbeh & Alhajaya, 2019), and auditor judgment, audit fee and audit quality (Lee & Phua, 2019). Another stream of research examines factors that affect auditors' disclosures of KAM (Kitiwong & Srijunpetch, 2020; Suttipun, 2020; Ferraira & Morrais, 2019; Pinto & Morrais, 2019).

2.2 Firm Characteristics and KAMs

Firm characteristics play a significant role in shaping the disclosure of Key Audit Matters (KAMs) in audit reports. A study by Suttipun (2020) explained that factors such as audit rotation, profitability, firm size and complexity affect KAMs disclosure. Larger firms tend to disclose more KAMs due to the increased complexity of their operations, which present more areas that require significant auditor attention. Additionally, large firms are subject to greater public scrutiny and regulatory expectations, demanding for more transparent and detailed disclosures. In a study of firms listed on the Dhaka Stock Exchange in Bangladesh between 2018 and 2020, Rahaman, Hossain and Bhuiyan (2022) found that highly regulated and environmentally sensitive firms tended to disclose more detailed KAMs. Additionally, their study found that firm size and age were positively associated with greater KAMs disclosure.

Profitability has a more significant effect on KAMs (Zito, Stefanoni, & Broccardo, 2021). Highly profitable firms may face fewer financial reporting risks, auditors may still emphasize KAMs related to earnings management, revenue recognition, or valuation methods due to the incentive to maintain favourable performance. More profitable firms are generally perceived as having lower audit risk which implies fewer extreme uncertainties, fewer contentious estimates and fewer indications of going concern risk. Thus, auditors may identify fewer KAMs, or the KAMs may be less severe. This matches the negative associations found in some studies such as Suneerat and Panya (2020) who found that profitability is negatively associated with the number of KAMs disclosure. Their findings implied that firms in Thailand that are more profitable tend to issue *fewer* KAMs. Similarly, the study of Chinese listed firms by Wang and Wu (2024) explained that ROA (return on assets), a profitability measure, has a significant negative relationship with the number of KAMs disclosed. More profitable firms disclose fewer KAMs. However, a study in Indonesia by Gita and Dina (2023) found that financial performance proxy by profitability has no significant impact on overall KAMs disclosures.

The International Auditing and Assurance Standards Board (IAASB) introduced KAMs under ISA 701 to enhance transparency and provide insights into areas of significant auditor attention. For highly leveraged firms, auditors often face greater estimation uncertainty and complexity, especially when assessing solvency and financial viability, which aligns with risk-based audit approaches (IAASB, 2015). Empirical research also supports this link, indicating a positive correlation between leverage and the number or complexity of KAMs disclosed (Carson et al., 2020). Therefore, firm leverage acts as a key determinant in the auditor's identification and communication of KAMs.

Leverage, or the extent of a firm's debt, is also associated with more KAMs, as highly leveraged companies pose greater financial risk. This often prompts auditors to flag issues such as going concern assumptions or impairment of assets as key areas of focus (Özcan, 2021). Firm leverage, often measured by the ratio of debt to equity or assets, increases a company's financial risk due to higher obligations related to debt repayment and interest costs. This increased risk prompts auditors to focus more on areas susceptible to material misstatement or uncertainty, particularly regarding liquidity, going concern assumptions, and debt covenant compliance. Several studies have supported this connection, showing that higher leverage is positively associated with the number and complexity of KAMs disclosed in audit reports. For instance, Pinto and Morais (2019) found that firms with higher leverage levels are more likely to have KAMs related to liquidity, solvency and debt valuation due to the increased estimation uncertainty and auditor judgment involved in these areas.

Further, auditor characteristics also have a significant influence on KAMs disclosures (Hussin et al., 2023; Özcan, 2021). Big Four auditors are generally associated with more detailed and readable KAMs reports due to their access to superior audit methodologies, greater expertise, and a reputation-driven need to demonstrate audit quality (Hussin, et al., 2023). However, some studies have found that non-Big Four auditors may disclose a greater number of KAMs, possibly as a strategy to enhance credibility or to compensate for a perceived lack of brand recognition (Özcan, 2021). Other audit-related factors, such as audit fees, tenure, and partner characteristics including gender and experience also play a role in shaping the content and readability of KAMs. For instance, Hussin et al. (2023) found that KAM disclosures tend to be more readable when the audit partner is female and when audit fees are higher, suggesting that both individual and engagement-level factors can impact audit communication. Rahaman, Hossain, and Bhuiyan (2022) also find that Big Four auditors were found to provide more detailed KAMs, they did not necessarily report a greater number of them. Interestingly, audit fees and auditor rotation did not have a significant impact on disclosure levels.

Further, Özcan (2021) conducted research on manufacturing firms in Turkey and found that firm complexity and auditor type significantly influenced the number of KAMs disclosed. Interestingly, in some instances, non-Big Four auditors reported more KAMs than their Big Four counterparts. However, the audit opinion itself did not show a strong relationship with KAMs disclosure levels. In the Malaysian context, Hussin et al. (2023) examined FTSE 100 companies and observed that KAMs readability improves when audits are conducted by Big Four firms, when audit fees are higher, and when female audit partners are involved. Despite these factors, their study also noted that KAMs disclosures are often difficult to read, potentially limiting their usefulness to stakeholders. A cross-country European study by Pasc & Hategan, (2023), investigated how often related party transactions (RPTs) appear among disclosed KAMs. The findings revealed notable differences based on audit firm type (Big Four vs. non-Big Four), as well as significant variation across industries and countries in both the frequency and depth of KAMs disclosure.

Collectively, those studies underscore the importance of firm characteristics and auditor attributes shaping the quality and transparency of KAMs reporting. Based on the above discussion this study proposed the following hypotheses.

H1. There is a positive relationship between firm size and KAMs.
H2. There is a positive relationship between firm leverage and KAMs.
H3. There is a negative relationship between firm profitability and KAMs.
H4. There is a negative relationship between auditor size and KAMs.

3.0 RESEARCH METHODS

This study employed quantitative research methods to examine the statistical relationship between KAMs and firm characteristics. Sample of the study is 100 randomly selected companies listed on the Main Board of Bursa Malaysia from 2018 to 2021. This study uses secondary data (annual reports) for the KAMs and DataStream for company characteristics data. The secondary data of the annual reports were from year 2018 to 2021. Data on the KAMs is manually collected from the annual reports and classified based on its category either related to accounting estimates or not related to accounting estimates.

Research model of this study is
$KAMsit = \alpha_1 + \beta_1 FSIZE_{it} + \beta_2 FLEV_{it} + \beta_3 ROA_{it} + \beta_4 Big4_{it} + \varepsilon_{it}$.
Where:
KAMs is measured as the number of key audit matters disclosed by firms in year t
FSIZE is firm size measured as the natural log of total assets
FLEV is firm leverage measured as total liabilities divided by total assets.
ROA is measured as earnings before interest and tax (EBIT) divided by total assets
Big 4 is Big 4 audit firms- KPMG, Deloitte, Ernst & Young and PwC

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 1 portrays the descriptive statistics including the minimum, maximum, mean and standard deviation values of the dependent and independent variables. The dependent variable is KAMs and the independent variables are firm characteristics. The firm size ranges from 35 thousand to 886 million with a mean of RM41 million. The ratio of firm liabilities to total assets (leverage) is from 0 to 93% with a mean of 47%.

Based on the mean of leverage, it seems that the companies have a lower debt ratio as the total debt is less than 50% of total assets. For profitability, measured by earnings before interest and tax over total assets (EBIT/TA) or Return on Assets (ROA), it shows that some of the companies suffer a loss with a minimum value of -0.21 and the maximum profit of 1.0. On average the ROA of the sample company is 0.71. About 72.43% of the companies are audited by BIG4 audit firms either by KPMG, Deloitte, Ernst & Young and PwC.

Table 1: Descriptive Statistics

Variables	Min	Max	Mean	Std. Dev
KAMs	0.00	6.00	2.3860	1.96173
KAMs-FAIRVALUE	0.00	2.00	1.071	0.256
KAMs-IMPAIRMENTS	0.00	4.00	1.6667	0.79142
KAMs-OTHER ESTIMATES	0.00	5.00	0.6015	0.87345
BIG4	0.00	1.00	0.7243	0.44742
FSIZE (RM)	36243.00	886667015.00	41904339.97	117179005.20
LGFSIZE	10.50	20.670	15.3707	2.28878
ROA	-0.21	1.03	0.710	0.10050
LEVERAGE	0.00	0.93	0.4722	0.25104

Table 2 displays details of the number of key audit matters (KAM) reported from 2018 to 2021 that are categorised as related to accounting estimates and not related to accounting estimates. Total KAMs classified as accounting estimates for the four-year sample period are 747 cases and 143 cases for not related accounting estimates. KAMs that are related to accounting estimates are classified into three types of estimates which are fair valuation, impairment of assets and other estimates. The overall number of KAMs reported remained relatively stable, ranging between 211 and 227 across the four years. There was a slight decline from 227 in 2020 to 211 in 2021, indicating a possible decrease in the complexity or focus of audit matters reported.

Table 2: Number of Key Audit Matters in Malaysia from 2018 - 2021

Sources of key audit matters	2018	2019	2020	2021	Total
Fair Value	28	25	19	20	92
Impairment of assets	101	96	111	107	415
Other estimates	61	70	60	49	240
Total related to accounting estimates	190	191	190	176	747
Total not related to accounting estimates	37	34	37	35	143
Total of key audit matters	227	225	227	211	890

Table 3 presents the correlation between KAMs measured by fair valuation, asset impairment, and other estimates; and firm characteristics. Overall, total KAMs show a negative relationship with firm profitability (ROA) and the use of Big 4 auditors, suggesting that less profitable firms and those audited by non-Big 4 auditors tend to disclose more KAMs. This may reflect higher financial reporting risks in such firms.

When analysed individually, fair valuation KAMs exhibit a positive relationship with both ROA and Big 4 auditors. This implies that fair value concerns are more prevalent in profitable firms and those with Big 4 auditors, warranting closer scrutiny to prevent earnings manipulation. In contrast, KAMs related to asset impairment show a positive correlation with firm size and leverage, and a negative correlation with ROA. Larger firms and those with more frequent audit committee meetings may face more impairments due to stricter oversight, while less profitable firms may disclose more impairments as part of income management strategies.

Table 3: Correlation Analysis

Items	1	2	3	4	5	6	7	8
1. KAMs	1							
2. KAMs-FAIR	0.19	1						
3. KAMs-IMP	0.24	-0.04	1					
4. KAMs-OTHER	0.24	-0.08	0.05	1				
5. FSIZE	0.11	0.16	0.27**	-0.06	1			
6. LEV	0.12	0.16	0.23**	-0.01	0.55**	1		
7. ROA	-0.27*	0.15**	-0.19**	0.02	-0.08	-0.01	1	
8. BIG4	-0.27*	0.23**	0.04	-0.03	0.54**	0.39**	0.09	1

Significant level at *** 1%, ** 5 % and * 10%, respectively

Further, this study also investigates whether firm characteristics (size, leverage, profitability, and Big 4 auditor) influence the disclosure of KAMs. Results in Table 4 show a positive and highly significant relationship between firm size and the number of KAMs reported. Larger firms tend to have more KAMs. Larger firms often have more complex operations, diversified product lines, and extensive geographical presence. This complexity can lead to a higher number of significant risk areas, prompting auditors to report more KAMs. Besides, larger firms are also subject to greater regulatory oversight and public attention, which may compel auditors to exercise increased diligence, resulting in the identification and reporting of more KAMs (Al Lawati & Husainey, 2022).

The relationship between leverage and the number of KAMs is positive but not statistically significant. Higher leverage indicates greater financial risk, which could lead to more KAMs, auditors might not uniformly perceive leverage as a determinant for reporting KAMs. This could be due to effective risk management practices in leveraged firms or auditors focusing on other risk factors. This finding contradicts to the finding in Mah'd and Mardini (2022) who found that companies in the Middle East are under financial risk, proxied by leverage, leading auditors to disclose more KAMs. However, the significance of this relationship can vary based on regional and industry-specific factors.

The result also provides a negative and moderately significant relationship between profitability (ROA) and the number of KAMs reported. More profitable firms tend to have fewer KAMs. This may be due to higher profitability often reflects robust financial health and efficient management, potentially leading to fewer areas of concern during audits and, consequently, fewer KAMs. Study by Al Lawati and Husainey (2022) has shown that firms with higher financial performance metrics, such as ROA, often have fewer KAMs, as auditors perceive them to have a lower risk of material misstatement.

Further, firms audited by Big 4 auditors are associated with fewer KAMs, and this relationship is highly significant. Big 4 firms have access to extensive resources, advanced methodologies, and specialized expertise, enabling them to resolve potential issues during the audit process, which may lead to fewer KAMs being reported (Chen et al., 2024). Hussin et al. (2023) also claimed that the rigorous internal processes and quality control measures in Big 4 firms might address potential KAMs before the audit report is finalized, resulting in fewer reported KAMs.

These findings are aligned with existing literature, suggesting that larger firms report more KAMs due to increased complexity, while more profitable firms have fewer KAMs, possibly due to better financial health. The association of Big 4 auditors with fewer KAMs highlights their role in maintaining high audit quality and effectively addressing potential issues during the audit process. These insights underscore the importance of considering firm characteristics and auditor attributes when evaluating KAMs disclosures, as they provide valuable information about the audit process and the areas of focus within a company's financial statements.

Table 4: Regression Analysis- KAMs and Firm Characteristics.

Variable	Coefficient	Std. Error	t-stat	p-value
Constant	-0.061	0.512	-0.120	0.908
FSIZE	0.192	0.039	4.919	0.001***
LEV	0.131	0.324	0.404	0.687
ROA	-1.481	0.681	-2.174	0.030**
BIG4	-0.868	0.182	-4.776	0.001***
No of observations	400			
R^2	0.106			
Adjusted R^2	0.097			

Significant level at ***1%, ** 5%, and *10%, respectively.

As KAMs is classified into three different types (fair valuation, impairment of assets, and other estimates), the regression results in Table 5 reveal that for fair valuation, the firm size, ROA and BIG4 have a negative insignificant relationship. The negative coefficient indicates that larger firms might report slightly fewer fair value measurement KAMs, but this relationship is not statistically significant ($p = 0.648$). This could imply that firm size does not substantially influence the reporting of fair value-related KAMs. For ROA the negative coefficient implies that more profitable firms might report fewer fair value KAMs, possibly due to better financial health and less risky asset portfolios. However, this finding lacks statistical significance ($p = 0.506$).

Table 5: Regression Analysis- KAMs by Items and Firm Characteristics.

	Fair Value		Impairment		Other estimates	
Variable	Coefficient	p-value	Coefficient	p-value.	Coefficient	p-value
Constant	1.143	0.001	0.022	0.954	1.036	0.002
FSIZE	-0.008	0.648	0.119	0.001***	-0.032	0.216
LEV	0.294	0.131	0.203	0.236	0.079	0.710
ROA	-0.401	0.506	-1.414	0.536	0.146	0.745
BIG4	-0.092	0.167	-0.394	0.128	0.012	0.923
R2	0.062		0.138		0.005	
Adjusted R2	0.014		0.124		0.005	

Significant level at *** 1%, ** 5% and *10%, respectively.

Further, firms that are audited by Big 4 firms might result in fewer fair value KAMs, potentially due to their expertise in complex valuations. This relationship, however, is not statistically significant ($p = 0.167$). In contrast, the leverage indicates a positive coefficient, suggesting that higher leverage may lead to more fair value KAMs, aligning with the notion that leveraged firms engage in complex financial transactions requiring fair value assessments. However, this relationship is also not statistically significant ($p = 0.131$).

For impairment of research-related KAMs, the positive and highly significant coefficient ($p = 0.001$) suggests that larger firms are more likely to report impairment-related KAMs. Larger firms often have diverse asset portfolios, increasing the complexity of impairment assessments. A positive coefficient with leverage indicates that higher leverage might lead to more impairment KAMs, possibly due to increased financial risk affecting asset valuations. This relationship, however, is not statistically significant (p =

0.236). Both ROA and Big 4 exhibit negative coefficient suggesting that more profitable firms might report fewer impairment KAMs, potentially due to better-performing assets. This finding is not statistically significant (p = 0.536). The negative coefficient indicates that Big 4 auditors might report fewer impairment KAMs, possibly due to their rigorous audit methodologies. This relationship is not statistically significant (p = 0.128).

None of firm characteristics displays a significant result in relationship with other estimates as the p-values are 0.216 (FISZE), 0.71(LEV), 0.745 (ROA) and 0.923 (Big4). These results imply that the reporting of KAMs related to various estimates often depends on the inherent uncertainties and complexities within a firm's financial reporting processes, rather than on specific firm characteristics.

5. CONCLUSION

This study examines the influence of firm characteristics including firm size, leverage, and profitability (ROA) on the disclosure of Key Audit Matters (KAMs). The results reveal that firm size has a positive and highly significant relationship with the number of KAMs disclosed. This supports the notion that larger firms, due to their operational complexity and regulatory visibility, are subject to more significant audit risks, leading auditors to report more KAMs. In contrast, profitability (ROA) shows a negative and moderately significant relationship with KAMs disclosure, indicating that more financially healthy firms tend to face fewer audit risks and thus attract fewer KAMs. Leverage, although positively related to KAMs, is not statistically significant, suggesting that auditors may not consistently consider financial risk (as proxied by leverage) in KAMs reporting, possibly due to effective risk mitigation in some highly leveraged firms.

Additionally, the findings highlight that audits conducted by Big 4 firms are associated with significantly fewer KAMs. This supports the view that Big 4 auditors, with superior resources, expertise, and internal controls, are better equipped to address complex audit matters internally before they necessitate formal disclosure in audit reports.

Based on these findings, the significant effect of firm size and profitability on KAMs disclosure supports the need for context-sensitive audit regulations. Thus, regulators should consider industry and firm-specific characteristics when evaluating audit report disclosures and setting thresholds for KAMs relevance. Given the finding that Big 4 auditors report fewer KAMs due to more effective resolution of audit issues, smaller firms should invest in developing audit methodologies and staff capabilities that align more closely with Big 4 standards, especially in handling complex clients.

Despite the valuable insights, findings of this study may not be generalizable beyond the specific national or regional context in which the data were collected. Even though, KAMs disclosure in Malaysia has improved transparency, the level of specificity and clarity still varies significantly across companies. Differences in regulatory environments and industry structures can significantly affect KAMs disclosure practices. Thus, it is recommended for future research to further explore how regional differences, industry-specific risks, and auditor–client relationships affect the application and disclosure of KAMs.

ACKNOWLEDGEMENT

The authors would like to thank University Utara Malaysia (UUM) for supporting this study through the University Grant (S/O Code: 21675).

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Paper ID: 09

Governance and Sustainability Challenges of SMEs in the Automotive Industry in Malaysia

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Abstract

Governance refers to the system by which an organisation is directed, monitored and guided towards achieving its strategic objectives. In the increasingly complex and competitive automotive industry, the practice of sound governance has become indispensable. For small and medium-sized enterprises (SMEs), governance challenges often differ from those encountered by larger corporations, encompassing issues such as business leadership, accounting practices, technology adoption, and risk management. Addressing these challenges necessitates sound managerial practices alongside a proactive approach towards governance. The implementation of robust governance frameworks, built upon agency theory, is critical in shaping organisational direction and ensuring long-term sustainability. Ineffective governance may not only jeopardise the survival of individual companies and the broader automotive ecosystem but also impede national economic growth and development.

Keywords
Governance, Sustainability, Agency Theory, SMEs, Automotive Industry

1. INTRODUCTION

The automotive industry has long been a vital driver of national economic development. It contributes significantly to Gross Domestic Product (GDP) growth, generates employment, and enhances government revenue through taxation. Beyond these direct contributions, the industry stimulates a wide range of related sectors, including manufacturing, logistics, spare parts distribution, and after-sales services. This interconnectedness not only raises service quality but also expands consumer choice.

Within this ecosystem, small and medium-sized enterprises (SMEs) play a critical role. In fact, "According to official statistics from the Department of Statistics Malaysia, SMEs grew by 5.8 per cent in 2024, outpacing the country's overall economic growth of approximately 5.1 per cent, and non-SMEs, which recorded a growth rate of 4.7 per cent." (Bernama, 2025, as cited in The Star, 4 August). Despite their contribution to national economic development, they encounter distinct challenges compared to larger corporations, particularly in relation to governance and sustainability. Accordingly, the governance model for such companies may differ from that of large conglomerates (Handley & Molloy, 2022). A strong governance model is essential for reinforcing the resilience and ensuring the long-term viability of local automotive enterprises.

2. ISSUES

Public and academic discussions of the automotive sector have largely focused on external factors such as global competition, taxation policy, technological advancement, fluctuations in demand and supply; and supply chain management (such as Wei et al., 2019 and Sakuramoto et al., 2019). By contrast, internal organisational issues especially those concerning governance and management within SMEs have received comparatively limited attention. This gap underscores the importance of developing a deeper understanding of how governance shapes the sustainability of SMEs in the automotive industry. Addressing this issue is critical not only for the survival of individual firms but also for ensuring the overall resilience of the national automotive sector.

Based on the definition provided by SME Corp of Malaysia, SMEs are classified into several categories. The classification is as follows (refer Figure 1):

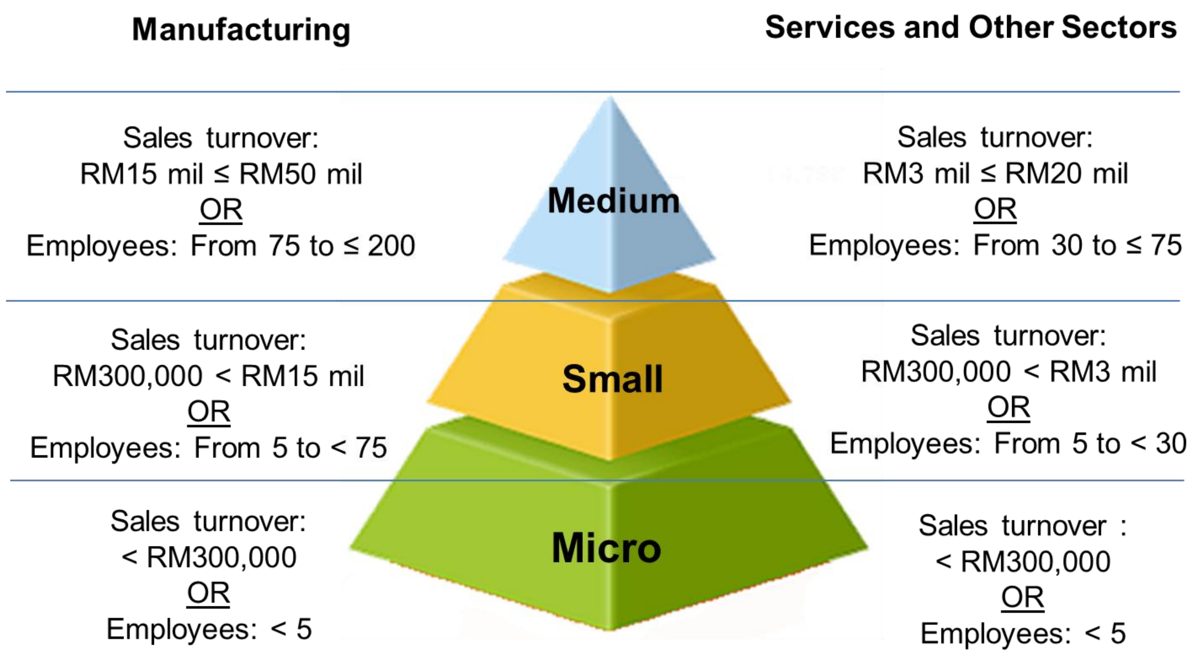

Figure 1: SME Definition

Source: https://smecorp.gov.my/index.php/my/polisi/2020-02-11-08-01-24/sme-definition.

Companies involved in this industry can fall into various categories. In Malaysia's automotive sector, the number of firms engaged in manufacturing is relatively low, and most automotive manufacturing companies are large in size. In contrast, the majority of automotive-related companies are small or medium sized enterprises (SMEs) within the services and other services category. These include businesses engaged in selling used cars, imported reconditioned vehicles, automotive accessories and supplying spare parts.

3. CHALLENGES

Several previous studies have examined the challenges within the automotive industry. However, these studies primarily focused on large-scale companies and tended to emphasize technical aspects of the industry (e.g., Mohammad Nazir & Shavarebi, 2019; Monye et al., 2023).

As previously noted, small and medium-sized enterprises (SMEs) possess distinctive business characteristics that differentiate them from larger firms. Many are family-owned, established by a founder and subsequently inherited by family members or relatives. Consequently, business management and governance are often influenced by the founder, with decision-making processes conducted informally and shaped by family sentiments. Formal mechanisms such as structured meetings or systematic discussions are not always practiced in such organisations.

Financial reporting and management processes also tend to be unsystematic. Financial records are prepared by the owners themselves or by family members, which increases the risk of errors, manipulation, or misrepresentation of the company's financial position. This undermines the credibility of financial statements, particularly in an industry where transactions and vehicle stock involve substantial amounts.

Another critical challenge is the limited use of technology and data management systems. Without sufficient investment in technology, companies face higher risks of inefficiency, inaccuracies, and difficulties in handling complex transactions. While the cost of adopting new technologies may be viewed as burdensome, the long-term benefits clearly outweigh the costs. Failure to embrace digital transformation exposes SMEs to competitive disadvantages and prevents alignment with broader industry shifts towards automation and digitalisation. Nevertheless, in the realm of marketing, social media has been fully leveraged by businesses to enhance their sales and market presence. This demonstrates a positive development, reflecting the capability of enterprises to adapt to contemporary communication technologies.

Succession planning represents yet another pressing issue that often receives inadequate attention. Many firms lack a structured strategy to ensure leadership continuity when the founder left the company. This creates uncertainty about whether the business will be led by capable successors who share the same vision and objectives. The absence of succession planning policies significantly heightens organisational vulnerability, especially during periods of crisis.

Moreover, the rapidly changing business environment demands that SMEs adopt a forward-looking and adaptive approach. Contemporary challenges are not confined to domestic issues but are also shaped by global dynamics, including geopolitical tensions disrupting supply chains and aggressive policies by foreign governments to strengthen their own automotive industries. SME owners and management teams must therefore remain vigilant, adaptable, and proactive in responding to such uncertainties.

3.1 Addressing the Challenges

To overcome these challenges, SMEs in the automotive sector must systematically strengthen their governance practices. First, clear reporting lines and well-defined delegations of authority should be established to ensure that employees fully understand their roles, responsibilities, and reporting structures. This enhances accountability while reducing overdependence on family ties in decision-making.

Second, the adoption of formalised governance frameworks is essential to reinforce organisational structures. Such frameworks may include codes of governance outlining the rights and responsibilities of employees and shareholders, as well as procedures for engaging with external stakeholders (e.g. financial institutions and regulators). Implementing these mechanisms promotes organisational discipline and alignment with industry's best practices.

Board of directors leadership and accountability are fundamental dimensions of good governance. Boards must operate with transparency, adhere to established policies, and exercise their responsibilities within clearly defined limits. Complementing this, risk management must be embedded into day-to-day operations. Systematic identification, documentation, and monitoring of risks, followed by the implementation of clear mitigation strategies, will strengthen organisational resilience.

Apart from that, strengthening financial management and transparency is also important. Financial statements should be prepared by qualified personnel and subjected to regular audits to ensure both accuracy and credibility. Transparent financial reporting enhances stakeholder trust and supports the long-term sustainability of SMEs.

Finally, SMEs must prioritise capacity building and training to align governance practices with business-specific needs. Training programmes should not only address sector-specific challenges but also provide practical governance skills. A key component of this effort is the separation of ownership and management roles, which fosters professionalism, accountability, and efficiency in decision-making.

3.2 Agency Theory and SMEs in the Automotive Industry

Based on the above discussions, this paper outlines several key elements that should be incorporated into a governance framework for automotive companies operating in the industry, as presented in Figure 2 below. In developing this framework, the agency theory proposed by Jensen and Meckling (1976) is applied. This theory explains the relationship between business owners (principals) and company managers (agents).

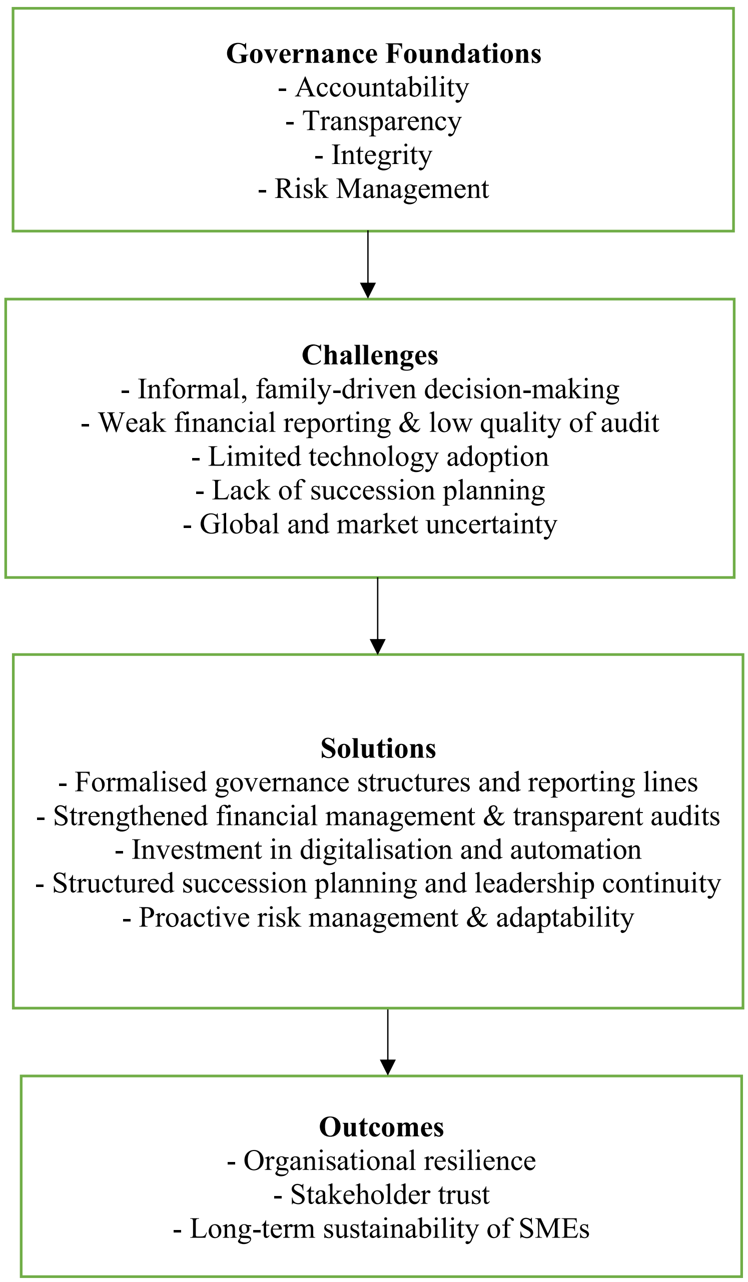

Figure 2: Governance Framework for SMEs in the Automotive Industry

Based on the figure above, family-owned businesses or SMEs need a governance foundation that emphasises accountability, integrity, and risk management. Such a foundation enables them to handle challenges more effectively, build stakeholder confidence, and ensure long-term sustainability.

In the automotive sector, the relevance of agency theory increases when businesses expand and professional managers are appointed. These managers may not share the same vision as the owners, and business growth can also create information asymmetry, where managers possess more detailed knowledge of operations. This raises the risk of agents prioritising personal interests over organisational goals.

To address this, SMEs must be prepared to allocate agency costs to align managers' actions with owners' aspirations. This includes strengthening monitoring mechanisms, such as internal audit functions and high-quality external audits.

It is worth mentioning that unresolved agency problems can seriously harm companies, especially in the fast-moving automotive industry where SMEs also depend heavily on financial institutions for growth. Therefore, adopting sound governance and managing agency issues effectively is vital for maintaining stakeholder trust and supporting long-term business continuity.

4. CONCLUSION

Governance encompasses the systems and processes through which organisations are directed, managed, and controlled. In the context of a highly competitive and rapidly evolving automotive industry, sound governance is indispensable for ensuring continuity and resilience. Companies that fail to adopt appropriate governance mechanisms risk undermining both their sustainability and competitiveness.

In addition, effective risk management must be institutionalised as an integral part of corporate culture. Embedding systematic approaches to identifying, assessing, and mitigating risks enables firms to anticipate disruptions and respond to challenges with agility. Ultimately, the integration of agency theory into a robust governance framework and comprehensive risk management practices not only enhances the survival prospects of SMEs in the automotive sector but also contributes to the resilience, stability, and sustainable growth of the national economy.

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Paper ID: 10

Factors Affecting E-Invoice Awareness among University Students: An Exploratory Study at Universiti Utara Malaysia

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Abstract

This exploratory study investigates the factors influencing awareness of the electronic invoicing (e-Invoice) system among accounting students at Universiti Utara Malaysia (UUM). As Malaysia undergoes digital tax transformation under the national MyDIGITAL agenda, e-Invoicing represents a key reform shaping the future of accounting practice. Given the limited prior research on e-Invoice awareness, this study explores the role of five potential determinants—digital skills, perceived usefulness, trust in government, social norms, and attitude—drawing upon the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM). Using a quantitative survey of 100 accounting students, the study employed multiple regression analysis to assess the strength of relationships between these variables and awareness. Results reveal that social norms significantly influence students' e-Invoice awareness, while digital skills, perceived usefulness, trust in government, and attitude are not statistically significant predictors. Findings underscore the importance of peer influence and institutional engagement in fostering awareness among future accounting professionals. This exploratory evidence contributes to understanding how educational institutions and policymakers can support responsible digital tax adoption and enhance compliance culture among the next generation of accountants.

Keywords
e-Invoice, awareness, social norms, attitude, digital skills

1. INTRODUCTION

Malaysia's tax system plays a vital role in national development through revenue mobilization, redistribution, and economic stabilization (Egbunike et al., 2018). As part of ongoing reforms to strengthen fiscal transparency and digital governance, the Inland Revenue Board of Malaysia (IRBM) has introduced the electronic invoicing (e-Invoice) system. This initiative is expected to reshape accounting practices by promoting automation, data integrity, and compliance accountability. The transition to e-Invoicing forms part of Malaysia's broader commitment to responsible tax management under the MyDIGITAL Transformation Blueprint. However, effective implementation depends not only on infrastructure readiness but also on public awareness—especially among future taxpayers and accounting professionals.

University students, particularly accounting majors, represent the next generation of business and financial decision-makers. Their awareness and acceptance of digital tax systems are critical for sustaining reform momentum. Yet, existing studies (Raudhiah et al., 2024) suggest that digital awareness among Malaysian students remains limited, and little is known about the factors influencing e-Invoice awareness. Given the scarcity of prior empirical evidence, this study adopts an exploratory approach to identify the underlying factors shaping students' awareness of e-Invoicing. Understanding these factors is essential to shape responsible accounting behaviours and enhance compliance attitudes aligned with national reform goals.

2. LITERATURE REVIEW

The introduction of electronic invoicing (e-Invoice) marks a significant step in the global shift toward digital tax administration and paperless accounting environments. Defined as the creation, transmission, and storage of invoices in a structured digital format that complies with tax and legal requirements (European Commission, 2010), e-Invoicing enhances efficiency, transparency, and traceability of business transactions. Countries such as Brazil, Chile, and Italy have implemented e-Invoicing mandates nationwide, demonstrating substantial improvements in tax compliance and reductions in administrative costs (Rauch et al., 2016). In Asia, nations including Singapore and China have integrated e-Invoicing within their digital governance systems, reflecting growing emphasis on technology-enabled tax administration (Rong Wu, 2013).

In Malaysia, the e-Invoice initiative, spearheaded by the Inland Revenue Board of Malaysia (IRBM), is part of the MyDIGITAL Blueprint for digital transformation in public service delivery. It aims to enhance tax transparency, reduce fraud, and simplify compliance through automation. Despite its potential benefits, public understanding of e-Invoicing remains at an early stage, particularly among younger populations. Awareness is essential to encourage voluntary compliance and to build trust in digital reform mechanisms. Lack of awareness may hinder adoption and delay realization of reform objectives.

Awareness, as defined by Brown and Ryan (2003), refers to the state of being conscious or informed about a specific issue or system. In this context, e-Invoice awareness reflects individuals' understanding of the system's purpose, operations, and potential benefits in ensuring tax accountability. According to Kotler and Keller (2016), awareness influences behavioural responses by shaping individuals' willingness to adopt and use new technologies. Thus, understanding what drives awareness is vital to inform the design of education, communication, and policy strategies for digital tax initiatives.

The current study draws on two foundational theories: the Technology Acceptance Model (TAM) (Davis, 1989) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). TAM posits that perceived usefulness and perceived ease of use are primary determinants of technology adoption. TPB, on the other hand, highlights three determinants—attitude, subjective norms, and perceived behavioural control—that collectively influence behavioural intentions. Combining these perspectives enables a holistic understanding of how individual, technological, and social factors affect awareness and potential adoption of e-Invoicing.

Digital skills are often considered a prerequisite for participating effectively in digital economies. They encompass the technical, cognitive, and socio-emotional abilities to use digital technologies responsibly and effectively (van Laar et al., 2017). Prior studies have shown that students with strong digital skills demonstrate greater confidence in adopting new systems (Ng, 2012; Sari & Arif, 2019). However, awareness and acceptance do not necessarily follow from digital competency alone; exposure and perceived relevance also play critical roles.

Perceived usefulness, a central construct in TAM, refers to an individual's belief that using a technology enhances task performance (Davis, 1989). Studies have consistently shown that when users perceive tangible benefits, such as efficiency or accuracy, they are more likely to adopt the system (Venkatesh & Bala, 2008). For students, perceiving e-Invoicing as valuable for academic learning or future professional application may shape their awareness and openness toward its use.

Trust in government is another important determinant of acceptance of public digital systems. It reflects citizens' confidence in the government's capability, integrity, and commitment to safeguard data (Kim & Lee, 2012). Previous research demonstrates that high trust levels reduce perceived risks and enhance public engagement with e-government services (Pavlou, 2001; Carter & Bélanger, 2005). In Malaysia, perceived transparency and security of tax systems significantly affect citizens' compliance behaviour (Lean et al., 2009).

Social norms, as emphasized in TPB, denote perceived social pressure to perform or not perform a particular behaviour (Ajzen, 1991). In educational contexts, peer influence, lecturer endorsement, and institutional support strongly affect students' awareness and behaviour (Fishbein & Ajzen, 2011). Prior empirical findings indicate that social norms are a significant predictor of adoption in technology-related studies, such as online learning (Ramayah & Aafaqi, 2004) and e-payment systems (Rahman et al., 2020).

Attitude represents an individual's positive or negative evaluation of a system or behaviour (Eagly & Chaiken, 1993). Favourable attitudes toward digital innovations often lead to higher awareness and eventual adoption. For instance, Alalwan et al. (2017) found that users with positive attitudes toward mobile banking displayed greater willingness to explore and use such platforms. Similarly, students who perceive e-Invoicing as useful and relevant to their careers are expected to be more aware of its functions and implications.

Although previous studies have investigated digital literacy and technology adoption, empirical research on e-Invoice awareness remains scarce, particularly in the Malaysian context. This exploratory study therefore aims to bridge this gap by analysing how digital, perceptual, institutional, and attitudinal factors collectively influence awareness among accounting students—the future custodians of financial accountability.

3. METHODOLOGY

This study employed an exploratory quantitative design to identify key factors influencing e-Invoice awareness among accounting students. The exploratory approach was deemed appropriate given the limited literature on e-Invoice awareness in Malaysia. The study sought to generate initial empirical insights that could inform future confirmatory or longitudinal investigations.

The target population consisted of accounting students enrolled in taxation-related courses at Universiti Utara Malaysia (UUM). These students were chosen as they represent a population likely to engage with e-Invoicing in their future professional roles. The total population comprised 680 students, from which 100 valid responses were obtained using purposive sampling. Although the response rate (14.7%) was modest, it met the recommended threshold for exploratory studies and regression analysis (Hair et al., 2018).

Data was collected via an online questionnaire distributed using Google Forms. The instrument consisted of 29 items measuring six constructs: awareness (dependent variable), digital skills, perceived usefulness, trust in government, social norms, and attitude (independent variables). Each construct was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire items were adapted from validated scales in previous studies to ensure content validity.

Before full distribution, a pilot test was conducted among 20 students to ensure clarity, reliability, and face validity of the instrument. Minor revisions were made to improve wording and reduce ambiguity. Cronbach's alpha coefficients for all constructs exceeded 0.70, indicating satisfactory internal consistency (Sekaran, 2016). Ethical considerations were observed throughout the study. Participation was voluntary, anonymity was guaranteed, and respondents provided informed consent before completing the survey. Data was analysed collectively and used solely for academic purposes.

Data analysis was performed using descriptive statistics and multiple regression analysis. Descriptive statistics summarized the general trends of awareness and the independent variables. Multiple regression was employed to test the hypothesized relationships between the predictors and awareness, providing insight into the relative strength of each factor. The exploratory use of regression allowed identification of patterns rather than causal inferences, consistent with the study's objective of building preliminary understanding.

4. FINDINGS

Multiple regression analysis using SPSS was utilized to analyse the data collected. Results indicate that digital skills have a negative relationship towards e-invoicing awareness among the UUM accounting students; and all other independent variables have positive relationships towards the e-invoicing awareness. However, only social norms are found to have a significant relationship towards e-invoicing awareness at $p<0.001$. Table 1 presents the results of the multiple regression analysis examining the effect of the five independent variables on e-Invoice awareness among students.

Table 1: Multiple Regression Analysis

	Unstandardized Coefficient		***Standardized Coefficient***		
	B	**Std. Error**	**Beta (β)**	**t**	**Sig**
Constant	1.159	0.527		2.1997	0.030
Digital skills	-0.203	0.131	-0.153	-1.541	0.127
Perceived usefulness	0.034	0.151	0.028	0.228	0.820
Trust in Government	0.095	0.119	0.089	0.799	0.426
Social norms	0.493	0.125	0.498	3.955	<0.001
Attitude	0.255	0.186	0.193	1.369	0.174

Adjusted $R^2 = 0.421$

5. DISCUSSION AND CONCLUSION

As an exploratory study, these findings provide early insights into the behavioural and social dimensions influencing e-Invoice awareness among accounting students. The results reveal that social influence is the most powerful driver of awareness, supporting the Theory of Planned Behaviour, which emphasizes subjective norms as a key determinant of behavioural intention. Peer encouragement, lecturer guidance, and institutional messaging play crucial roles in shaping awareness and attitudes toward digital tax systems. As e-Invoicing becomes a national requirement, fostering social engagement within academic communities could accelerate understanding and compliance among future taxpayers.

The non-significant effects of digital skills and perceived usefulness suggest that awareness does not automatically arise from technological literacy or perceived benefits. Although students are digitally competent, they may lack direct exposure or information about the e-Invoice system. Similarly, trust in government and attitude showed positive but insignificant relationships, indicating that awareness campaigns should emphasize both transparency and hands-on engagement with e-Invoicing processes.

From a policy perspective, this exploratory study underscores the need for collaborative efforts among the government, universities, and professional accounting bodies to integrate e-Invoicing knowledge into the accounting curriculum. Embedding digital tax education supports responsible accounting practices and aligns with Malaysia's reform agenda for transparent and technology-driven fiscal management. Future research could extend this exploratory analysis by including diverse institutions and exploring behavioural intentions or compliance readiness.

In conclusion, this study contributes to the discourse on shaping the future of accounting through digital reform and responsibility. By exploring what drives awareness among students—the accountants of tomorrow—stakeholders can better prepare them to uphold transparency, accountability, and innovation in the evolving landscape of tax and financial management.

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Paper ID: 11

Enhancing Soft Skills and Competencies in Students through Micro Credential Programs and Open Educational Resources (OER): A Pathway to Quality Education

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Abstract

Open Educational Resources (OER) represent a transformative approach to education, providing accessible, high-quality learning materials at no cost to learners worldwide. In the context of micro credential programs, OER plays a critical role in advancing educational equity and accessibility. This conceptual paper aims to study the implementation of a micro credential program that focuses on critical thinking and problem-solving skills within the Accounting Information Systems course. By integrating OER into the curriculum, the program aims to enhance students' competencies in these essential skill areas, which are increasingly vital in today's dynamic job market. The literature indicates a shift in higher education towards online platforms and micro credentials, marking a departure from traditional degree programs. However, challenges such as public awareness, institutional readiness, and managing large online learner populations remain. Through the effective use of OER and innovative technology, this micro credential initiative seeks to improve student engagement and learning outcomes, ultimately contributing to a higher standard of quality education. This research highlights the potential of micro credentials to reshape perceptions of learning and certification, supporting the goals of the Malaysian Education Blueprint 2015–2025 and aligning with global standards for quality education.

Keywords
Open Educational Resources, Micro credential, Higher Learning

1. INTRODUCTION

The rapid evolution of digital technologies and open education practices has transformed the landscape of higher education worldwide. Traditional models of teaching and learning are increasingly being complemented or, in some cases, replaced by flexible, technology-enhanced approaches that promote accessibility, personalization, and lifelong learning. Central to this transformation are Open Educational Resources (OER) and micro credential programmes, which have emerged as innovative strategies to make education accessible to everyone and foster skill-based learning. OER initiatives enable free and open access to educational materials, supporting collaboration and knowledge-sharing across institutional and national boundaries. At the same time, micro credentials enable learners to design their own educational paths by offering modular, competency-based validation of learning that fits with industry demands.

In the context of higher education, these innovations not only expand learning opportunities but also play a critical role in cultivating 21st-century competencies such as critical thinking and problem-solving. As universities adapt to the demands of the digital economy and post-pandemic learning environments, integrating OER and micro-credential approaches has become increasingly vital for enhancing teaching effectiveness and student engagement. This conceptual study reviews key literature surrounding open educational resources, the development and implementation of micro credentials, particularly in Malaysia, and their role in supporting the acquisition of higher-order cognitive skills.

2. LITERATURE REVIEW

2.1 Open educational resources

Open educational resources (OERs) refer to collections designed to provide broad access to knowledge and educational opportunities (Bissell, 2009) which is part of a broader movement toward openness in higher education, alongside established initiatives such as open-source software (OSS) and open access (OA) (Hylén, 2021). UNESCO (2019) defines OER as teaching, learning, and research materials, whether digital or otherwise, that are either in the public domain or shared via open licenses permitting anyone to use, adapt, and redistribute them freely and without restriction.

The rapid expansion of OER presents significant opportunities to enhance teaching and learning at higher education institutions (Yuan et al., 2008). OERs fall within the broader category of "open solutions," which also includes free and open-source software and open-access resources. Recognizing OERs as "public commodities" has enabled universal, cost-free access to content as needed. The web has become the main platform for accessing and reading electronic materials in this era of information and communication technology, fundamentally transforming teaching and learning in academia. OERs include Massive Open Online Courses (MOOC), Micro credentials, open textbooks, open repositories, open journals and open-source software.

Implementing OER initiatives in educational settings can promote professional development, faculty collaboration, and improved student outcomes. Access to knowledge and educational materials is essential for enhancing teaching, lifelong learning, and personalized education (William and Flora Hewlett Foundation, 2013). The main objective of open educational resources (OERs) is to make organized knowledge available to students beyond the traditional classroom. Educators have a supportive role in finding helpful tools and information, creating resources, and facilitating learning (Lane, 2008).

2.2 Micro credential

Micro credential programmes are different from the traditional university degree programmes (Ahmat,et al., 2021). The MQA (2019) defines micro credential as a programme that focuses on a limited series of modules and focuses on a narrow range of skills or competencies. These skill and competency-based online certificate programmes sometimes are stacked or grouped, which allow learners to accumulate the modules or a series of modules for more recognizable credentials (Ralston, 2021). Micro credential programmes often award digital badges or credentials given online for participants who completed their modules (Ahmat,et al., 2021).

Micro credential as a term has become popular in the last five to ten years despite several similar and related concepts being introduced before that (Fischer, Oppl, & Stabauer, 2022). For instance, when discussing innovation in higher education qualifications, Massive Open Online Courses (MOOCs) and the platforms that provide them are frequently brought up. However, MOOCs are a type of course mode (e.g., offered online, to a large group of people) (Wulf, Blohm, Leimeister, & Brenner, 2014), whereas micro credentials are a type of credential that can result from a MOOC. According to the MQA (2020) micro credential certification programme is an official recognition of learning through courses of organized lessons, modules, or units that give learners knowledge, skills, values, and competencies in a specific field of study or discipline through digital badges, as certification.

2.3 The Development of Micro credentials In Malaysia

The current education system has to change by allowing people from everywhere to have access to education. Technology is transforming the way education used to be, from traditional methods of getting degrees to entirely using online platforms to earn a degree. Learners do not have to be present and complete their programmes on campus to get a degree because most processes can be done online. Since technology has been widely used in education and the pandemic has accelerated the growth of online learning, many higher education providers use technology to develop and offer academic and non-academic programmes either fully or partially online. This way, learners can potentially come from all over the world (Ahmat et al., 2021).

In alignment with this, the Malaysian government is committed to transform the Malaysian higher education and aims to raise the level of our education parallel to the international standards, This is evidenced in the Malaysia Education Blueprint 2015 – 2025 where many higher learning institutions are reflecting one of the sustainable development goals by the United Nations related to quality education (SDG Goal 4: Quality Education) when learners from different countries and backgrounds could have an equal opportunity to learn and participate in the programmes. The government plan is aligned with the current phenomena of online learning, as many higher education institutions utilized technology and innovation to offer a better and more personalized learning experience.

According to Ahmat et al., (2021) micro credential programmes might be well-known in Western countries, but most Malaysians are not familiar with the term. Therefore, issues would include the level of awareness and acceptance of the public, learners, educators, and employers in recognizing this enhanced education system beyond the traditional education system (MicroHE, 2019). Traditional degree programmes still dominate Malaysia's education landscape, and most employers are still asking for academic transcripts during the hiring process even though there are learning additional credentials added in the applicants' CVs.

Another issue in micro credential programme is to manage the mass number of online learners. Since micro credential programme is fully implemented online, there are possibilities for course enrolment from massive learners worldwide (Alias, 2020). Thus, it may be challenging to handle learners in large numbers in terms of monitoring and assessing the learning activities.

Additionally, institutional readiness to provide appropriate resources in terms of facilities and infrastructure is crucial (Acree, 2016; Ralston, 2021). Developing teaching materials for micro credentials requires instructors to use interactive videos as the learning aid, thus requiring a proper studio with suitable equipment for video production. Technological tools such as video production hardware and educational software could also catalyse succeeding course development stages. The readiness will also cover the needs of a proficient technical support team to assist in the overall process, such as during the course development stages and maintenance of the online platform (Ahmat,et al., 2021).

2.4 Critical Thinking and Problem-Solving Skills

One of the most crucial thinking abilities and most significant measures of student learning is critical thinking skills. Critical thinking must be included in the curriculum material and instructional strategies, and it must be taught successively across all grade levels (Alsaleh, 2020). Although critical thinking is seen as a crucial talent by business education students (Davis, Riley, & Fisher, 2003), students are still lacking in performing the instilled critical thinking skills. (Snyder and Snyder, 2008).

According to Halpren (1997, p. 4), critical thinking is the "use of those cognitive skills or strategies that increase the probability of a desirable outcome." It is used to define thinking that is deliberate, logical, and goal oriented. Critical thinking is intentional, logical, and goal directed. It is the way we think in problem solving, draw conclusions, estimate probabilities, and make judgements. In a variety of contexts, critical thinkers apply these talents correctly, naturally, and frequently with deliberate effort. In other words, when someone thinks critically, they assess the results of their thinking processes, determine the quality of a choice, or determine how successfully a problem has been solved (Alsaleh, 2020).

In order to assist students to improve their critical thinking and problem-solving skills, educators need to encourage them to adopt the skills on their own in facilitating their assignments or class projects. In this era of technological advancement, various tools and technologies are available to assist students in preparing for project assignment without the presence or guidance from their lecturers. Therefore, microcredential programmes are suitable for adoption by students which can encourage students to perform their critical thinking skills.

3. UNDERPINNING THEORETICAL FRAMEWORK

This conceptual study is guided by several interrelated educational theories that underpin open education and competency-based learning. These frameworks collectively support the notion of learner autonomy, flexibility, and personalized learning pathways.

3.1 Open Education Theory

The pillars of open education include inclusivity, accessibility, and student empowerment (Cronin, 2017; Wiley & Hilton, 2018). With its origins in constructivist and connectivist learning paradigms, open education emphasizes the democratization of information through digital platforms and open educational resources (OER). This approach allows students to engage with the content at their own pace, which fosters self-directed learning and lifelong learning skills. According to Downes (2019), open education promotes the idea that learning should be "distributed, networked, and participatory," which aligns with the goals of micro credential programmes that recognize minor successes.

3.2 Competency-Based Learning

Micro credentials are based on competency-based learning (CBL), which emphasizes mastery of particular abilities and quantifiable results above time-based advancement (Oliver, 2019). According to Myung et al., (2020), micro credentials provide modular, stackable learning experiences that may be tailored to individual requirements and industry standards. In line with andragogical ideas, adult learners are self-motivated, goal-oriented, and ready to apply what they have learned to real-world situations right away (Knowles, 1984).

Micro credential learning encourages students to take ownership of their learning process by engaging in flexible, self-paced modules that reinforce key concepts outside the traditional classroom setting. This enhances engagement and promotes higher-order cognitive skills such as analysis, synthesis, and evaluation which is the core dimensions of critical thinking.

3.3 Self-Regulated Learning (SRL) and Reflective Practice

The design of the micro credential intervention also draws upon *Self-Regulated Learning Theory* (Zimmerman, 2002) which posits that learners who actively plan, monitor, and reflect on their learning processes demonstrate improved academic outcomes. Reflection enables learners to assess their progress, identify areas for improvement, and develop metacognitive awareness (Nicol & Macfarlane-Dick, 2006).

These theoretical perspectives support the integration of reflective activities within the micro credential experience, fostering deeper engagement and sustainable learning.

3.4 Connectivism

Connectivism, proposed by Siemens (2005), emphasises the importance of networks, technology, and social connections in learning, as a complement to the micro credential paradigm. Knowledge is dispersed over a network of digital nodes in an open educational ecosystem, and students develop their competencies via communication and teamwork. The design of the micro credential program, which links students, teachers, and online learning materials via the micro credential platform, is supported by this theoretical framework.

Together, these theoretical perspectives establish a strong foundation for understanding how micro-credentials can transform traditional learning environments into dynamic, learner-centred ecosystems that promote critical thinking, problem solving, and lifelong learning. This is depicted in Figure 1.

Figure 1 Micro Credential Conceptual Framework

4. RESEARCH METHODOLOGY

4.1 Research Design

A case study will be designed to enable an in-depth exploration of the phenomenon within its authentic educational context. Case study research involves the comprehensive analysis of a specific individual, group, or event, providing rich, descriptive insights into complex educational settings (Bishop-Clark & Dietz-Uhler, 2012). As Patton (2002) asserts, case studies allow researchers to attain a deeper understanding of a phenomenon by generating extensive qualitative data. While case study findings are not always generalizable, they yield valuable context-specific insights.

In this research, an experimental component was also incorporated. Pre- and post-intervention interviews were conducted to capture participants' reflections and experiences related to the micro credential programme.

The study participants comprised students enrolled in the *BKASK2123 Accounting System Analysis and Design* course. The primary objective is to assess the impact of micro credential learning on student performance, engagement, and overall teaching effectiveness.

The *BKASK2123* course includes five main topics, from which one subtopic was selected for the micro credential intervention. Students were required to enrol in a corresponding micro credential course offered through the UUM Micro credential Platform (UUM Microcredential Portal). Upon completion, students received digital badges as evidence of achievement. The selected topic will not be taught in class instead, students were expected to apply the acquired knowledge to complete their group project tasks.

Project evaluations employed the Critical Thinking and Problem-Solving Rubric, focusing on students' abilities in problem analysis, evaluation, and decision-making.

5. CONCLUSION

In conclusion, open educational resources (OER) and micro credential programmes represent significant innovations that are reshaping the landscape of higher education. OER initiatives foster inclusivity, accessibility, and knowledge-sharing by providing learners and educators with open access to teaching and learning materials, while also encouraging collaboration and lifelong learning. Meanwhile, micro credentials offer flexible, skill-focused pathways that complement traditional degree programmes, enabling learners to acquire targeted competencies relevant to the evolving demands of the workforce.

In Malaysia, the integration of OER and micro credentials is aligned with the national agenda to enhance educational quality and global competitiveness. However, challenges such as public awareness, institutional readiness, and employer recognition must be addressed to ensure successful adoption. At the same time, the cultivation of critical thinking and problem-solving skills remains essential, as these competencies empower learners to apply knowledge effectively in academic, professional, and real-world contexts.

Ultimately, the synergy between OER, micro credentials, and the development of critical thinking can strengthen higher education by promoting flexibility, innovation, and lifelong learning opportunities. As technology continues to transform education, embracing these approaches will be crucial in preparing students to thrive in a dynamic and knowledge-driven society.

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Paper ID: 12

Descriptive Insights into AI Integration in Accounting Education: A Survey of Lecturers at a Malaysian University

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Abstract

The integration of Artificial Intelligence (AI) into accounting education is a critical response to the digital transformation of the accounting profession. This study provides a descriptive analysis of the current state of AI integration within the Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM), Malaysia. It focuses on lecturers' awareness, the extent of AI application adoption, and variations across academic units. Data were collected via a structured questionnaire from 51 accounting lecturers across five units. Descriptive analyses revealed a high level of awareness regarding AI's importance (m=4.24) and a moderate level of current usage (m=3.69). Notable disparities were observed across units, with the Accounting Information Systems unit demonstrating the highest adoption rates, while Management Accounting lagged. Chatbots and data visualization tools were the most used applications. The findings underscore a significant gap between AI awareness and its practical implementation, highlighting the need for targeted institutional strategies to bridge this divide.

Keywords
Artificial Intelligence, Accounting Education, Technology Adoption, Faculty Readiness

1. INTRODUCTION

The accounting profession is undergoing a profound transformation, driven by rapid technological advancements that are automating routine tasks and demanding new competencies from graduates (Daff, 2021; Qasim & Kharbat, 2020). In this evolving landscape, accounting education faces the imperative to integrate emerging technologies, particularly Artificial Intelligence (AI), to ensure graduates are equipped for the future workplace (PwC, 2020). While the potential of AI to enhance pedagogical effectiveness and student learning is widely acknowledged, the actual state of its integration into accounting curricula, especially from the perspective of educators, remains an underexplored area, particularly in the Malaysian context.

This study addresses this gap by examining the current scenario of AI integration at TISSA-UUM. The research problem centres on understanding the disconnect between the recognized potential of AI and its actual adoption in teaching practices. Drawing on Rogers' (1983) Diffusion of Innovations (DOI) theory, which posits that the adoption of new technology is influenced by factors such as its perceived relative advantage and compatibility, this study investigates the foundational stage of this process: faculty awareness and usage.

The purpose of this article is to present a descriptive analysis of the awareness levels and current extent of AI application among accounting lecturers at TISSA-UUM. By mapping the landscape of AI integration and identifying variations across different accounting disciplines, this research provides a critical baseline understanding. The significance of this study lies in its ability to inform academic administrators, curriculum developers, and policymakers about the specific readiness and challenges faced by faculty, thereby enabling the design of targeted interventions to foster effective AI integration in accounting education.

2. LITERATURE REVIEW

The integration of AI in education, and specifically in accounting, is a growing area of scholarly inquiry, framed by both global trends and local challenges. At a macro level, national policies, such as Malaysia's National AI Framework (NAIF 2021-2025), identify education as a priority sector for AI implementation, supported by initiatives like the "AI for All" program in public universities (MOSTI, 2023). However, a significant implementation gap persists, with reports indicating that only 20% of faculty in Malaysian higher education have received formal AI training, creating a substantial barrier to curriculum integration (ACCA, 2022).

The driving force behind this push for integration stems from the evolving accounting profession. Research consistently shows that technological competencies are indispensable for accounting graduates seeking a competitive advantage in the job market (Daff, 2021). The profession's increasing reliance on AI-powered tools for tasks such as auditing, fraud detection, and data analysis necessitates a corresponding shift in education (Kokina et al., 2021; PwC, 2020). Consequently, accounting programs are urged to move beyond imparting traditional knowledge and focus on developing new competencies and redefining existing skills to prepare graduates for a rapidly changing industry (Sangster et al., 2020; Qasim & Kharbat, 2020).

A critical factor in this educational transformation is faculty readiness. Many current accounting educators received their professional training before the proliferation of these technologies, potentially creating gaps in knowledge and confidence (Sangster et al., 2020). This lack of preparedness is compounded by a noted resistance to change, with a preference for traditional teaching methodologies over AI-enhanced approaches observed among a significant portion of lecturers (Qasim & Kharbat, 2020). The perceived complexity of new technologies can present a significant barrier to adoption, even when their potential benefits are clear (Davis, 1989).

Theoretical frameworks provide a valuable lens for understanding these adoption dynamics. Rogers' (1983) Diffusion of Innovations (DOI) Theory offers a robust framework, identifying five key attributes that influence an innovation's adoption rate: relative advantage, compatibility, complexity, trialability, and observability. In the context of educational technology, the Technology Acceptance Model (TAM) similarly highlights perceived usefulness and perceived ease of use as primary determinants of user acceptance (Davis, 1989). These models suggest that for AI to be successfully integrated, lecturers must perceive it as offering a clear advantage, being compatible with their existing workflows, and not overly complex to implement, with opportunities for experimentation and observation of positive outcomes (Venkatesh et al., 2003).

Despite this theoretical understanding, there is a scarcity of empirical studies that descriptively map the current state of AI awareness and application among accounting faculty, particularly within the specific context of Malaysian universities. This study seeks to fill this void by providing a foundational descriptive analysis that can inform future research and strategic intervention.

3. METHODOLOGY

This research employed a quantitative, cross-sectional survey design to capture a snapshot of AI integration at a single point in time. The study's target population consisted of all 108 academic staff at TISSA-UUM, spanning five core units. Data were collected using a structured online questionnaire, developed based on established constructs from DOI theory (Rogers, 1983) and the Technology Acceptance Model (Davis, 1989; Venkatesh et al., 2003). The instrument was validated through expert review and pilot study. For this descriptive analysis, sections measuring demographic information, awareness of AI, and the extent of AI application were utilized. The questionnaire employed Likert-scale items to gauge awareness and recorded the usage status of various AI tools.

Data analysis was conducted using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, medians, standard deviations, and skewness, were computed to summarize and describe the central tendencies and dispersion of responses related to awareness and application of AI across the different academic units.

4. FINDINGS

4.1 Sample Demographic Profile

The demographic composition of the 51 respondents is presented in Table 1. The sample was drawn from five academic units within TISSA-UUM, providing a cross-sectional view of the faculty. The Accounting Information Systems (AIS) unit constituted the largest proportion of respondents (31.4%, n=16), followed by Financial Accounting (23.5%, n=12), Audit (19.6%, n=10), Taxation (13.7%, n=7), and Management Accounting (11.8%, n=6). This distribution reflects the relative sizes of the units within the school and ensures that perspectives from all core accounting disciplines are represented in the analysis. The over-representation of the AIS unit is particularly relevant, as it is the unit most inherently aligned with technology, and its responses are likely to provide insights into the higher end of the AI adoption spectrum.

Table 1: Demographic Profile of Respondents (N=51)

Academic Unit	**Frequency (n)**	**Percentage (%)**
Financial Accounting	12	23.5
Management Accounting	6	11.8
Taxation	7	13.7
Audit	10	19.6
Accounting Information Systems (AIS)	16	31.4
Total	**51**	**100.0**

4.2 Level of Awareness Among Lecturers

The descriptive analysis reveals a generally high level of awareness regarding AI's role in accounting education among TISSA-UUM lecturers. As shown in Table 2, respondents strongly acknowledged the importance of using AI (AW5, M=4.24, SD=0.83) and reported being familiar with its applications and planning to use it (AW3, M=4.20, SD=0.96). A moderate level of current usage was reported (AW6, M=3.69, SD=1.01), indicating that while lecturers are cognitively prepared, a transition to active adoption is still in progress.

Table 2: Descriptive Statistics for Awareness Items

Item Description	**Mean**	**Median**	**SD**
AW1: Never heard about AI	1.13	1	0.34
AW2: Heard of but never used AI	1.89	2	1.17
AW3: Familiar with and plan to use AI	4.20	4	0.96
AW4: Knowledgeable about using AI	3.53	4	0.86
AW5: Aware of the importance of AI	4.24	4	0.83
AW6: Already use AI in education	3.69	4	1.01

Note: Scale 1-5.

4.3 Variations in Awareness Across Academic Units

A more nuanced picture emerged when awareness was analysed by academic units. Lecturers in the Accounting Information Systems (AIS) unit consistently reported the highest levels of awareness and usage, particularly noting the importance of AI (M=4.67) and current usage (M=4.08). In contrast, the Management Accounting unit displayed the lowest scores on several items, including self-rate knowledge (M=3.20) and current usage (M=3.40). This disparity can be attributed to the inherent technological affinity of the AIS discipline, where curricula are more naturally aligned with digital tools (Kabudi et al., 2021). The lower scores in Management Accounting suggest that faculty in less technically oriented subjects may perceive a weaker alignment between AI and their core teaching content, a challenge related to the "compatibility" construct in DOI theory (Rogers, 2003).

4.4 Extent and Nature of AI Application Adoption

The analysis of specific AI tools revealed a clear hierarchy of adoption, favouring applications that offer a clear relative advantage and low complexity. As depicted in Table 3, Chatbots were the most widely adopted tool (45.1% have used), likely due to their immediate utility in student support and their perceived ease of use. Data Visualization tools have been followed (27.5% have been used), aligning well with accounting's focus on financial reporting and analysis (Pan & Seow, 2016).

Notably, more complex technologies like Machine Learning (ML) and Robotic Process Automation (RPA) showed low current usage but high future intention to adopt. This indicates a strong recognition of their potential relative advantage but also highlights that their "complexity" acts as a significant barrier to immediate implementation (Davis, 1989). The high uncertainty surrounding RPA (35.3% "Not Sure") further underscores the need for demystification and training for such tools (Kokina et al., 2021).

Table 3: Adoption Status of AI Applications (% of Lecturers)

AI Application	Have Used	Will Use	Not Sure
Chatbots	45.1%	31.4%	23.5%
Data Visualization	27.5%	49.0%	23.5%
Machine Learning	15.7%	68.6%	15.7%
Predictive Analytics	13.7%	62.7%	23.5%
Automated Data Entry	13.7%	62.7%	23.5%
Robotic Process Automation	11.8%	52.9%	35.3%

The distribution of AI applications across units further cemented the leadership role of the AIS unit. This pattern suggests that peer influence and observability as key elements in Rogers' theory are likely stronger within technically proficient units, creating an environment conducive to early adoption (Rogers, 1983; George, 2023).

5. CONCLUSION

This descriptive study provides a foundational assessment of AI integration in accounting education at TISSA-UUM. The key insight is that while lecturers are broadly aware of AI's importance and express positive intentions toward its use (Qasim et al., 2022), the transition to widespread and sophisticated application is incomplete. A significant awareness-implementation gap persists, characterized by the current dominance of less complex tools. Furthermore, the integration landscape is not uniform; it is markedly influenced by academic unit affiliation.

These findings carry several important implications. For practice, university administrators should move beyond generic AI promotion and develop unit-specific support strategies. Establishing a central AI resource centre could provide the necessary infrastructure and reduce the perceived complexity of advanced tools, facilitating greater trialability. From a policy perspective, these results advocate for incorporating AI literacy and digital pedagogy into faculty development programs. Professional accounting bodies can also play a role by updating accreditation standards to emphasize the integration of technology in curricula (ACCA, 2022).

For future research, this study highlights the need for qualitative inquiries to deeply explore the roots of resistance in slower-adopting units. Longitudinal research is also essential to track how these descriptive patterns evolve as institutional interventions are implemented. By addressing the nuanced challenges revealed in this descriptive analysis, academic institutions can better navigate the path toward a future-ready accounting education.

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Paper ID: 13

Determinants of Climate-Risk Reporting

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Abstract

This study examines whether strong corporate governance improves climate-risk reporting by listed companies in the plantation sector in Malaysia. Based on 81 observations from 2021 to 2022, the results show that companies in the plantation sector are struggling to disclose the climate-risk reporting. The extent of climate-risk reporting is low at 45.33% in 2021 and 45.22% in 2022. This means that more than half of the companies examined do not disclose their climate-risk reporting. The results of a bivariate analysis show that companies with strong governance, measured in terms of an existence of CSR committee, and the presence of a chief sustainability officer provided better climate-risk reporting than those without such governance. Nevertheless, after controlling for firms' size, financial performance, and leverage, the results of multivariate analysis show that the most influential drivers to the climate-risk reporting are firm size and financial leverage. The governance structure, in particular, the existence of a CSR committee is weakly associated with climate-risk reporting while the presence of a chief sustainability officer has no impact on the climate-risk reporting. These results contribute to the literature on climate-risk reporting by providing empirical evidence on the drivers to climate-risk reporting in the plantation sector. The results also suggest that large firms and firms with low debts level disclose better climate-risk reporting, highlighting the need for regulatory frameworks and incentives to encourage smaller firms and firms with high leverage to enhance their climate-risk reporting practices.

Keywords
Chief Sustainability Officer; Climate-Risk Reporting; CSR Committee; Palm Oil; TCFD

1. INTRODUCTION

Year 2024 has been marked by the World Meteorological Organization as the warmest year (Nullis, 2025). The National Aeronautics and Space Administration (NASA) links this ongoing rise in global temperatures to human-generated greenhouse gas emissions. As global warming continues, heatwaves and extreme precipitation events are projected to become more intense (Jahan et al., 2025; Martinez-Villalobos et al., 2025). This concerning trend highlights the urgency for coordinated global action to cut emissions and strengthen resilience against the inevitable impacts of climate change.

Research suggests that one approach to encourage corporations to address climate change is by enhancing climate change reporting (Amran et al., 2014; Giannarakis et al., 2018), which increases transparency, strengthens accountability, and motivates firms to adopt more sustainable practices. In addition, corporate governance has been identified as a significant factor in improving climate change reporting (Amar et al., 2023; Cosma et al., 2022; Principale & Pizzi, 2023). Cosma et al. (2022) explain that corporate governance is crucial for assessing a company's approach to climate change issues, with board involvement being a key indicator of a company's awareness. Thus, effective corporate governance can enhance climate change reporting. Accordingly, in this paper, we aim to investigate whether strong corporate governance improves climate-risk reporting.

2. REVIEW OF LITERATURE

This study employs two theoretical frameworks, namely, signally theory and legitimacy theory. Signaling theory posits that due to the asymmetrical information, corporations tend to disclose more of their environmental initiatives, especially when such disclosure attracts investments (Sassen, 2020). Thus, corporations portrayed their environmental initiatives as a signal to investors. Meanwhile, legitimacy theory suggests that corporations portray their environmental initiatives for survival purposes. As a result, they portrayed better environmental initiatives to obscure their negative impacts on the environment rather than to reduce environmental damage (Brammer and Pavellin, 2006).

Based on these theoretical frameworks, the following hypotheses are formulated:

H_1: Ceteris paribus, there is a positive relationship between the establishment of a CSR committee and climate-risk reporting.

H_2: Ceteris paribus, there is a positive relationship between the appointment of a Chief Sustainability Officer (CSO) and climate-risk reporting.

3. RESEARCH METHOD

This study employs a quantitative research approach using secondary data. To capture the extent of climate-risk reporting, this study undertakes a content analysis of annual reports and/or sustainability reports available on Bursa Malaysia. The analysis is guided by the framework of the Task Force on Climate-related Financial Disclosures (TCFD), focusing specifically on risk management. The annual reports and/or sustainability reports are also being used to gather data on the existence of CSR committee and the appointment of the chief sustainability officer. The financial data is obtained from Datastream.

4. RESULTS AND DISCUSSION

Figure 1 presents the results of the extent of climate-risk reporting by plantation companies in Malaysia for two years, i.e., 2021 and 2022. The results reported that the level of climate-risk reporting is low with a mean of 45.33% in 2021 and 45.22% in 2022. Many of the companies examined scored below 50%. Detailed investigation of the disclosure revealed that the companies examined performed well in disclosing their processes of identifying and assessing climate-related risks, and the process of managing these climate-related risks. Nevertheless, they provided poor disclosure with regard to the integration process of climate-risk reporting into the companies' overall risk management. This low score indicates that plantation companies tend to manage climate-risks in isolation rather than as part of a comprehensive, organizational-wide risk management strategy. These findings are consistent with Friedrich et al. (2023), who observed that while the identification, assessment, and management of climate-related risks are disclosed to a high extent, the integration process of these risks into overall risk management is disclosed with lower quality. This trend suggests that many companies still view climate risks as a standalone issue rather than an integral part of their overall risk management practices.

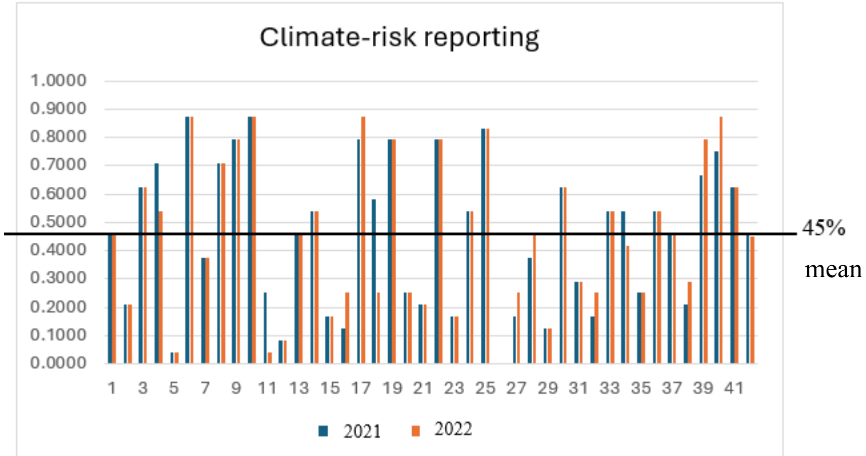

Figure 1: The extent of climate-risk reporting

Table 1 presents the results of Pearson's correlation coefficient analysis. The findings show that climate-risk reporting is significantly correlated with the governance structures and the control variables. Specifically, the results show a significant positive association between climate-risk reporting and the existence of a CSR committee, and the presence of a chief sustainability officer. These results suggest that companies with strong governance structure provide better climate-risk reporting than other companies. In addition, the results also show that climate-risk reporting is positively associated with firms' size, and financial performance, suggesting that larger firm, and firms with strong financial performances, measured in terms of ROA and Tobin's Q, disclose better climate-risk reporting than others.

Table 1. Pearson correlation coefficient

	CRR	CsrC	CSO	Size	ROA	Tobin's Q	Lev
CRR	1						
CsrC	.304***	1					
CSO	.247**	.067	1				
Size	.430***	.423***	.387***	1			
ROA	.281**	.270**	.030	.253**	1		
Tobin's Q	.291***	.259**	.166	.370***	.589***	1	
Lev	-.108	.297***	.165	.453***	-.032	.032	1

***, **, and * significance at 1%, 5% and 10%

Table 2 presents the results of the multivariate analysis of the influence of governance structures on climate-risk reporting after controlling for firms' size, financial performance, and leverage. In H_1, we test whether the existence of CSR committee (CsrC) has any impact on the climate-risk reporting. The result shows a positive but weak relationship between the presence of CSR committee and the climate-risk reporting. This result provides a weak support to H_1, suggesting that the existence of a CSR committee did play a role in improving the climate-risk reporting. Our result is consistent with Cosma et al. (2022) who found a positive relationship between CSR committee and climate-related disclosure of 101 European banks in 2018. Thus, our results offer limited support for signalling theory, which posits that CSR committees act as a signalling tool to ensure firms address the informational needs of investors and other parties seeking comprehensive and reliable climate-related disclosures.

Table 2. Factors influencing firms' climate-risk reporting

Variables	Coefficient	t statistics
CsrC	0.192*	1.807
CSO	0.119	1.162
Size	0.450***	3.579
ROA	0.092	0.781
Tobin's Q	0.013	0.108
Lev	-0.386***	-3.581
Adjusted R^2	0.301	
F	6.805	
N	81	

In H_2, we test whether the presence of a chief sustainability officer (CSO) influence climate-risks reporting. The results show a non-significant association between the presence of a chief sustainability officer and climate-risk reporting. Thus, our result did not provide support to H_2. Our findings differ from Thun & Zulch (2023), who suggest that the chief sustainability officer plays a pivotal role in ensuring that companies adhere to sustainability commitments and align with stakeholder expectations. The non-significance results may be due to the small number of chief sustainability officers in the total companies examined.

5. CONCLUSION

In this paper, we have examined whether strong corporate governance improves climate-risk reporting by listed companies in the plantation sector in Malaysia. Our results show that the palm oil companies examined do not provide adequate disclosure on climate-risks reporting, as on average the scores were below 50%, which is considered relatively low. The results also suggest that the existence of a CSR committee did play its role in promoting climate-risk reporting. Overall, the empirical findings of this study point to the need for regulatory frameworks and incentives to encourage smaller firms and firms with poor financial performance to enhance their climate-risks reporting.

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Paper ID: 14

The Effectiveness of the Anti-Fraud Mechanism in PPV's During COVID-19 Pandemic

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Abstract

During the COVID-19 pandemic in Malaysia, Pusat Pemberian Vaksin (PPV) demonstrated awareness of potential fraud and implemented preemptive measures to mitigate risks. The Ministry of Health (MoH) adopted a comprehensive vaccination strategy, establishing nationwide PPVs and utilizing both walk-in and appointment systems via the MySejahtera app. Public education campaigns and community engagement helped increase vaccine uptake and address hesitancy. Despite the introduction of anti-fraud mechanisms, their effectiveness remained limited. This study employs a qualitative research design to examine the maturity and impact of these mechanisms within PPVs. Semi-structured interviews were conducted with PPV lead officers and representatives from the Auditor General's Department to explore operational safeguards, governance practices, and ethical oversight. Findings indicate that fraud incidence was relatively low, largely due to the government's policy of providing vaccines free of charge. However, isolated cases involved individuals paying substantial sums to bypass queues and gain priority access. A lack of official communication regarding the redirection of excess payments raised concerns about transparency and accountability. These insights underscore the need for stronger fraud prevention frameworks, clearer public messaging, and enhanced institutional controls to safeguard public trust during health crises.

Keywords
Anti-Fraud, Malaysia, PPV, MySejahtera

1. INTRODUCTION

The COVID-19 pandemic has posed unprecedented challenges to health systems worldwide, including Malaysia. As of 2020, Malaysia reported its first COVID-19 case, triggering a nationwide public health response spearheaded by the Ministry of Health (MOH). The ministry played a pivotal role in coordinating strategies to curb the virus's spread, mitigate the impacts on public health, and navigate the socio-economic challenges posed by the pandemic. This essay provides a comprehensive analysis of the strategies adopted by the Malaysian Ministry of Health to counter COVID-19, focusing on healthcare management, vaccination campaigns, public communication, and policy interventions.

As of September 2024, Malaysia's COVID-19 vaccine distribution is stable and ongoing. The Ministry of Health has set up 234 Vaccination Centres (PPV) across health clinics nationwide. These centres are accessible for walk-ins or by scheduling appointments through the MySejahtera app. Vaccination is voluntary but highly encouraged, especially for high-risk groups such as the elderly or those with comorbidities. The country is currently using bivalent vaccines, which are effective against multiple strains of the virus. However, the Ministry of Health is also negotiating to procure monovalent vaccines from Pfizer that target specific virus strains. Despite a recent increase in COVID-19 cases, the available vaccines continue to provide effective protection against severe illness (KKM COVIDNOW Dashboard, 2025).

Managing COVID-19 vaccination in Malaysia involves a comprehensive approach by the Ministry of Health (MoH) to ensure high coverage and timely access to vaccines across the population. The strategy includes establishing numerous vaccination centres nationwide, utilizing both walk-in and appointment-based systems via the MySejahtera app to accommodate public preferences. The MoH emphasizes the importance of vaccination for high-risk groups and encourages ongoing compliance with health protocols to maintain control over virus transmission. Public education campaigns and collaborations with local communities and leaders help to increase vaccine uptake and address vaccine hesitancy.

The Ministry of Health (MOH) undertook several strategic initiatives to enhance healthcare capacity in anticipation of the rising number of COVID-19 cases. One of the key approaches was the expansion of healthcare infrastructure. The MOH repurposed and designated specific hospitals to treat COVID-19 patients, effectively increasing the availability of intensive care unit (ICU) beds and isolation wards. For instance, the Sungai Buloh Hospital was transformed into a dedicated COVID-19 facility, significantly enhancing the country's ability to handle severe cases (Shah et al., 2020).

Additionally, the MOH accelerated the procurement of essential medical supplies, such as personal protective equipment (PPE), ventilators, and COVID-19 testing kits, to ensure healthcare facilities were well-equipped to manage the surge in cases. The government's decision to utilize military and private healthcare resources further augmented the national healthcare capacity, allowing for a more flexible response to localized outbreaks (Anand,S., (2021); Jayasundara et al., 2021).

The ministry also implemented rigorous training programs for healthcare workers on managing COVID-19 cases, focusing on infection control practices, patient management, and proper usage of PPE. The importance of mental health support for healthcare workers was recognized, leading to the establishment of psychological support services to address the burnout and mental strain faced by frontline workers (Wong et al., 2022). The effectiveness of these measures was evident in the initial reduction of COVID-19 cases. However, the prolonged lockdowns had significant socio-economic impacts, necessitating a more balanced approach. Consequently, the government introduced the National Recovery Plan (NRP) in mid-2021, a phased exit strategy that aligned public health goals with economic recovery. The NRP categorized states and regions based on four phases, each with specific criteria for reopening, such as vaccination rates and healthcare system capacity (Tang, 2021). To support these policy interventions, the MOH strengthened its surveillance capabilities, employing data-driven decision-making to identify hotspots, predict outbreak trends, and allocate resources effectively. The ministry's transparent communication of data and policies helped maintain public trust and compliance with the measures, which was crucial for the success of the MCOs and the NRP (Sureshkumar et. al. (2023).

This study aims to investigate the integrity and resilience of fraud prevention mechanisms within Malaysia's COVID-19 vaccination centres (Pusat Pemberian Vaksin, PPVs) during the pandemic. Specifically, the objectives are:

1. To examine the nature and extent of fraud risks encountered in PPVs during the COVID-19 pandemic.
2. To assess the effectiveness of anti-fraud mechanisms implemented across PPVs.
3. To explore the roles of communication, leadership, and audit oversight in shaping organizational responses in PPV's to fraud.

2. LITERATURE REVIEW

COVID-19 vaccination has been a critical tool in the global fight against the pandemic, aiming to reduce transmission, severe disease, and mortality. In Malaysia, the National COVID-19 Immunisation Programme (PICK) was launched in February 2021 to vaccinate a significant portion of the population and ensure herd immunity. However, in the northern regions of Malaysia, including Penang, Kedah, Perlis, and parts of Perak, the vaccination rollout faced unique challenges

2.1 Vaccine Hesitancy and Misinformation

One of the significant issues that affected vaccination efforts in Northern Malaysia was vaccine hesitancy. Despite the availability of vaccines, a considerable portion of the population exhibited reluctance to get vaccinated. A study by Tang (2021) revealed that vaccine hesitancy in Northern Malaysia was driven by several factors, including fear of side effects, distrust in vaccine efficacy, and concerns over the rapid development of COVID-19 vaccines. Additionally, misinformation circulating on social media platforms contributed to public apprehension about vaccine safety, particularly regarding the mRNA-based vaccines like Pfizer-BioNTech and Moderna.

The spread of misinformation was exacerbated by limited digital literacy in certain rural areas of Northern Malaysia. Many residents, particularly the elderly, relied on word-of-mouth and social media for information, making them more susceptible to false claims and conspiracy theories (Zainun et.al., 2022). The lack of targeted public health communication to address these concerns and misinformation created a significant barrier to achieving higher vaccination rates in the region.

2.2 Logistical Challenges and Access Issues

Logistical challenges were another critical factor affecting vaccination efforts in Northern Malaysia. The region's geographical characteristics, with many rural and remote communities, posed difficulties in ensuring timely and equitable vaccine distribution. According to a report by Sureshkumar et. al. (2023) inadequate transportation infrastructure in rural areas hindered the delivery of vaccines to remote communities, resulting in delays and reduced accessibility. Additionally, some vaccination centres were located far from rural settlements, making it difficult for residents, particularly the elderly and those without access to transportation, to reach them.

The vaccination campaign in Northern Malaysia also faced challenges in maintaining an adequate supply chain. The need for cold storage for vaccines such as Pfizer-BioNTech and Moderna added another layer of complexity. Rural health facilities often lacked the necessary infrastructure to store these vaccines at the required ultra-cold temperatures, which led to supply chain disruptions and wastage (Sim et al., 2020). Furthermore, the deployment of mobile vaccination units was hampered by limited resources and inadequate planning, which further impeded efforts to reach remote populations (Bicher & Ashraf (2021).

2.3 Financial Allocation to Poster Campaigns: A Critical Assessment

The financial allocation for public health campaigns, including posters, was a significant component of Malaysia's broader strategy to combat COVID-19. In 2020 and 2021, the Ministry of Health (MOH) Malaysia allocated substantial funds to various communication campaigns, including the production, printing, and distribution of posters across the country (Abdullah et al., 2021). However, critics argue that the heavy expenditure on physical posters may not have been the most efficient use of resources, especially in the digital age.

Posters, as a traditional medium, required considerable funding not only for design and printing but also for distribution, especially to reach rural and remote areas. Estimates suggest that a significant portion of the budget was allocated to logistics, including transportation and labour costs associated with distributing these materials (Bicher & Ashraf (2021);Zainun et. al., 2022). Given the financial constraints posed by the pandemic, where funds were desperately needed for healthcare facilities, vaccine procurement, and economic relief, the allocation of substantial amounts to poster campaigns raised concerns about the prudent use of limited resources.

Moreover, some argue that the effectiveness of these posters was limited, particularly in urban areas where people were more likely to receive information through digital means. With the advent of social media, television, and mobile applications, the reliance on physical posters appeared outdated and less impactful. This critique points to a possible mismatch between the financial investment in poster campaigns and the actual reach and engagement of the target audience (Fincet, A., 2022).

2.4 Evaluating the Impact of Poster Campaigns: Effectiveness and Limitations

While posters have traditionally been an effective means of public communication, their impact during the COVID-19 outbreak in Malaysia was mixed. On the one hand, posters provided a simple and direct way to convey important messages in public spaces, such as hospitals, vaccination centres, and community centres. They were particularly effective in low-literacy contexts, where visual imagery could communicate key health messages quickly (Velu, S., 2021).

However, the limitations of the poster campaigns became evident as the pandemic progressed. In urban areas, where the public was overwhelmed with multiple forms of information, posters often failed to stand out or capture attention effectively. Additionally, posters were less adaptive than digital media in providing up-to-date information, such as changes in standard operating procedures (SOPs), vaccination schedules, or new COVID-19 variants (Bicher & Ashraf, (2021); Tang, 2021).

Furthermore, in rural areas, where access to healthcare facilities was already limited, posters placed in centralized locations were less likely to reach the intended audience. A study by Abdullah et al. (2021) indicated that many rural residents were unaware of the health messages conveyed through the posters, highlighting a disconnect between distribution efforts and the actual reach of the campaign.

3. METHODOLOGY

This study adopts a qualitative research design to explore fraud prevention mechanisms within vaccine distribution centres in the northern region of Malaysia. Data were primarily collected through in-depth interviews with the heads of selected distribution centres, focusing on three core areas: the allocated budget for fraud prevention initiatives, strategies employed to counter misuse or misconduct by officers, and the functional role of anti-fraud posters in shaping organizational behaviour. These interviews provided rich, contextual insights into the operational realities and ethical safeguards embedded within each centre. In addition to interview data, the study incorporated direct observations and reviewed selected audit reports issued by Jabatan Akauntan Negara to triangulate findings and enhance interpretive validity. Thematic analysis was employed to identify recurring patterns, institutional responses, and symbolic interventions, offering a grounded understanding of how fraud prevention is conceptualized and operationalized in practice.

Table 1 below represents the current situation in Malaysia and recent developments in vaccine distribution and fraud prevention. Here are six possible thematic categories from the research that has been conducted between 2021 and 2023 in the Northern Peninsular of Malaysia.

Table 1: Thematic Categories and Questions Asked during Data Collection

Themes	Questions asked
1. Budget Allocation and Resource Constraints	- How much is allocated for fraud prevention? - Are centres adequately funded to implement effective controls?

2.	Internal Control Mechanisms	- Procedures to detect and prevent misuse by officers. - Role of segregation of duties, audit trails, and digital tracking.
3.	Role of Anti-Fraud Communication	- Effectiveness of posters, signage, and awareness campaigns. - Psychological and behavioural impact on staff and stakeholders.
4.	Leadership and Ethical Culture	- Influence of centre leadership on fraud prevention. - Tone at the top and ethical decision-making.
5.	Technology Adoption and Data Transparency	- Use of blockchain or digital systems to track vaccine logistics. - Transparency in reporting and data integrity.
6.	Audit Oversight and External Scrutiny	- Insights from Jabatan Akauntan Negara audit reports. - How external audits reinforce accountability and expose vulnerabilities.

4. FINDINGS

4.1 Descriptive Analysis (Narrative Summarization)

The COVID-19 pandemic in Malaysia saw a rise in various types of fraud cases related to vaccination efforts. These fraudulent activities can be broadly categorized into several types:

4.1.1 Fake Vaccine Sales
One of the earliest types of fraud involved the sale of counterfeit or unauthorized COVID-19 vaccines. Fraudsters took advantage of the high demand and initial scarcity of vaccines to offer fake vaccines for sale, particularly through online platforms and social media (Zainun et.al., 2022). Several cases were reported where individuals paid large sums of money to obtain what they believed to be legitimate COVID-19 vaccines, only to find that they were either counterfeit or non-existent.

4.1.2 False Vaccination Certificates
Another prevalent form of fraud was the production and sale of fake vaccination certificates. With many countries and local jurisdictions requiring proof of vaccination for travel, entry into public spaces, and access to services, the demand for vaccination certificates increased. In Malaysia, several cases were reported where fraudsters sold fake digital and physical vaccination certificates to individuals seeking to bypass vaccination requirements (Jayasundara et al., 2021). Some scams even involved tampering with the MySejahtera app, Malaysia's official COVID-19 management app, to generate fraudulent vaccination records.

4.1.3 Phishing Scams and Fraudulent Vaccine Appointments
Phishing scams related to vaccine appointments also became common. Fraudsters impersonated government agencies or healthcare providers and sent out emails, text messages, or social media messages offering fake vaccination appointments. Victims were directed to click on malicious links or provide personal information, which was then used for identity theft or financial fraud (Ngoc, et. al. (2024); Tang, 2021). In some instances, victims were charged fees for these fraudulent appointments.

4.1.4 Unauthorized Fees for Free Vaccines
There were also reports of fraud involving unauthorized charges for vaccines that were supposed to be free. Some unscrupulous individuals and entities exploited the public's desperation to get vaccinated by charging fees for vaccine appointments or administration, which was against government policy (Fincet, A., 2022). This type of fraud primarily targeted undocumented migrants, refugees, and other vulnerable groups who were less aware of their rights and the free vaccination program.

4.2 Countering Fraud Measures Taken by KKM

In response to these fraud cases, KKM has implemented several measures to prevent and address fraudulent activities related to COVID-19 vaccination:

4.2.1 Strengthening Digital Security
The government improved the security features of the MySejahtera app to prevent tampering and the creation of fake certificates. Multi-factor authentication, regular updates, and stronger encryption methods were introduced to protect user data and ensure the authenticity of vaccination records (Tang, 2021).

4.2.2 Public Awareness Campaigns
Authorities launched public awareness campaigns to educate the public about the risks of fraud and how to identify legitimate vaccination processes (Accountant General Report, 2022). These campaigns were conducted through various media channels, including social media, television, radio, and print, to reach a wide audience (Anand,S. (2021); Fincet, A., 2022).

4.2.3 Collaboration with Tech Companies
The Malaysian government collaborated with social media platforms, tech companies, and telecommunication providers to monitor and remove fraudulent content, block fake websites, and report scams. This partnership helped reduce the prevalence of scams targeting the public through digital platforms (Ngoc et. al. (2024); Sureshkumar et. al. (2023).

4.2.4 Enforcement and Legal Action
Law enforcement agencies, including the police and the Malaysian Anti-Corruption Commission (MACC), were actively involved in investigating and prosecuting fraudsters. Several arrests were made, and offenders were charged under various laws, including the Penal Code, the Communications and Multimedia Act, and the Anti-Money Laundering Act (Jayasundara et al., 2021).

5. CONCLUSION

The COVID-19 pandemic in Malaysia saw a surge in fraud cases related to vaccination, ranging from fake vaccines and certificates to phishing scams and unauthorized charges. These fraudulent activities posed significant challenges to public trust and the success of the vaccination campaign. While authorities took various measures to counter these frauds, including enhanced digital security, public awareness campaigns, and legal enforcement, continuous efforts are needed to improve fraud prevention strategies in future public health crises. Strengthening digital literacy, enhancing public communication, and fostering stronger partnerships with digital platforms will be crucial to safeguarding public health efforts and maintaining trust in government initiatives.

Improving digital literacy is critical to overcoming fraud and misinformation during public health crises like the COVID-19 pandemic. While Malaysia has made strides in digital literacy, there is room for improvement, particularly in targeting vulnerable groups and enhancing public awareness. By adopting a comprehensive framework, utilizing community-based approaches, integrating digital literacy with public health initiatives, and developing culturally relevant content, Malaysia can strengthen its digital defences against fraud. Drawing lessons from other ASEAN countries, Malaysia can build a more resilient and informed society that is better equipped to face future challenges.

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Paper ID: 15

Stress and Resilience in Entrepreneurship Education

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Abstract

This conceptual paper explores the issues of stress and resilience of students undertaking entrepreneurship education, with a focus on Universiti Utara Malaysia. While entrepreneurship courses cultivate innovation, opportunity recognition, and value creation, they also heighten academic demands that contribute to student stress. Resilience, therefore, emerges as a vital competency for sustaining well-being and achieving entrepreneurial success. Drawing on relevant literature, this paper proposes a multi-faceted framework to enhance student well-being and academic performance. The framework includes (1) student-targeted workshops on stress and resilience; (2) educator development programs to foster supportive teaching practices; and (3) stronger collaboration with university counselling services. These measures aim to create a sustainable academic environment that prioritizes mental health, enhances learning outcomes, and equips students with lifelong coping strategies. By integrating well-being initiatives within entrepreneurship education, this conceptual study supports Sustainable Development Goal 3 (SDG 3) and underscores the role of higher education in preparing resilient future entrepreneurs.

Keywords
Stress, Resilience, Entrepreneurship Education

1. INTRODUCTION

Entrepreneurship is widely recognized as a driver of innovation, economic growth, and employment, with education playing a vital role in cultivating entrepreneurial skills and mindset. In Malaysia, the government has actively promoted entrepreneurship through initiatives since the 1990s, and universities have integrated entrepreneurship courses to enhance students' creativity, opportunity recognition, and value creation (Kolvereid & Moen, 1997; Ibrahim & Soufani, 2002). While such education strengthens entrepreneurial intention, it also places students under significant academic pressure, contributing to heightened stress levels, as documented among Malaysian university students (Mohd Nor et al., 2019). Stress is not only a by-product of academic demands but is also intrinsic to entrepreneurship itself, characterized by uncertainty, risk, and heavy workload. Within this environment, resilience emerges as an essential competency that enables students to cope with challenges, sustain well-being, and achieve entrepreneurial success (Fisher, 2016).

The objective of this paper is to propose a structured framework and recommendations to strengthen student well-being and academic performance. Drawing on relevant literature, the paper highlights how entrepreneurship education can be enhanced through integrated strategies that balance academic rigor with psychological support. The proposed framework serves as a guide for universities, educators, and policymakers in fostering a learning environment that nurtures both entrepreneurial competencies and emotional resilience, consistent with Sustainable Development Goal 3 (SDG 3) on good health and well-being.

2. LITERATURE REVIEW

2.1 The Role of Entrepreneurship Education in Universities

Entrepreneurship has been interpreted through several schools of thought. Bruyat and Julien (2001) highlight that, while economics views entrepreneurship as a process of creating new value, it also involves the individual's growth and change, reflecting an educational and behavioural dimension **(**Bruyat & Julien, 2001). Although these perspectives differ in focus, they converge on key entrepreneurial attributes such as visionary thinking, opportunity recognition, and innovation. Policy frameworks further reinforce this importance. The European Council (2006) identifies entrepreneurship as a lifelong competency, while Gundry, Ofstein, and Kickul (2014) argue that entrepreneurs must not only take risks but also leverage their skills to create value. Thus, entrepreneurship is positioned not simply as a business endeavour but also as a personal competency with broader societal relevance.

In Malaysia, entrepreneurship development has been elevated to a national priority. The establishment of the Ministry of Entrepreneurship Development in 1995 symbolized government commitment (Sandhu et al., 2010). Universities have since embedded entrepreneurship courses, training, and business projects into curricula. Empirical studies consistently show that such exposure fosters stronger entrepreneurial intentions and behaviours (Rahim et al., 2015; Ibrahim & Soufani, 2002).

These efforts align with Malaysia's National Higher Education Action Plan (2007–2010), which sought to promote entrepreneurial skills. Worldwide, this shift reflects the understanding that stable jobs are no longer guaranteed, and students must be ready for uncertain careers. However, while the educational benefits are clear, less attention has been given to the psychological impact especially stress. This raises the critical question of whether entrepreneurship education adequately balances skill development with student well-being.

2.2 Stress and Resilience in Entrepreneurship Education

The dual demands of academic requirements and entrepreneurial projects often intensify student stress. Malaysian undergraduates, especially in programs such as accounting, experience particularly high workloads (Mohd Nor et al., 2019). Entrepreneurship courses add another layer of complexity, since they simulate the uncertainty and responsibility inherent in entrepreneurial practice. Research confirms that entrepreneurship itself is stress-inducing. White and Gupta (2020) categorize entrepreneurial stressors into sources such as business operations and role expectations, with consequences for coping and well-being. Cardon and Patel (2015) further note that prolonged exposure to entrepreneurial stress can undermine health, suggesting parallels with students in entrepreneurship education.

Nevertheless, resilience functions as a protective factor. Fisher et al. (2016) highlight its role in enabling entrepreneurs to navigate adversity, while González-Lópeza et al. (2018) demonstrate that entrepreneurship education interventions can cultivate resilience and entrepreneurial intentions simultaneously. Ahmed et al. (2022) extend this argument, emphasizing that stress and resilience operate dynamically: stress exposure fosters resilience, which in turn sustains entrepreneurial engagement.

Entrepreneurship education has evolved from optional programs to institutionalized learning. At UUM, SADE1013 Introduction to entrepreneurship is among five Core Obligated Courses offered to UUM students. The course provides students with conceptual understanding and experiential learning, including managing small-scale ventures. There are four course learning outcomes (CLOs): (1) explain the concept and importance of entrepreneurship; (2) discuss the business environment and entrepreneurial skills; (3) demonstrate a business platform through website and social media; and (4) prepare a business plan. In order to achieve the CLOs, instructors usually offer a comprehensive project assignment, including setting up a new business. Thus, students need to impart the skills needed to set up a new business and to put in more dedication and effort in order to complete the course. This practical approach undoubtedly cultivates entrepreneurial mindsets, yet it also heightens academic pressure by requiring students to juggle coursework with entrepreneurial projects.

2.3 Counselling Services at UUM

In UUM, the Counselling Unit was established in 1984 under the Student Affairs Department and was later upgraded to the Counselling and Career Centre on 11 October 1998. This transformation enabled the centre to adopt a more focused direction and expand its range of services. The Counselling and Career Centre plays a vital role in supporting the academic, personal, and interpersonal development of UUM students by providing short-term individual and group counselling, psychological assessments, and consultations for faculty, staff, parents, and students. It also conducts educational programs to promote mental health and well-being within the campus community. The centre offers assistance for issues related to stress, crisis, conflict, and personal challenges that may affect students' studies or campus life. The centre provides a safe and supportive environment where personal concerns can be openly explored with professional counsellors. At present, UUM has five psychology officers.

Guidance and counselling services can improve academic achievement, enhance personal development (Oluremi, 2014), solving vocational, personal-social problems of students and decision-making (Salami, 1998). In Malaysia, the proportion of university students seeking career counselling remains relatively low (Rashid, Hussin, & Putih, 2005). Stress levels, however, can be reduced when students are open to seeking help from counsellors (Ciarrochi & Deane, 2001). Despite this, many undergraduates hold negative perceptions of counselling, viewing it as uncomfortable, risky, and difficult to engage in (Flansburg, 2012).

3.0 PROPOSED FRAMEWORK AND RECOMMENDATIONS

Based on the literature, a comprehensive approach is needed to effectively address stress and strengthen resilience among entrepreneurship students.

3.1 Seminars for Students

Structured programs focusing on stress management and resilience-building should be integrated into the course. These programs can help students develop essential emotional and psychological skills to cope with academic and entrepreneurial challenges more effectively. Techniques such as mindfulness, relaxation, and deep breathing can reduce anxiety and improve coping (Amanvermez et al., 2023; Zahra and Riaz, 2018). Regular practice of these techniques not only promotes emotional balance but also enhances focus, self-awareness, and overall well-being. In addition, resilience-focused interventions, such as goal-setting and cognitive restructuring, can further prepare students for challenges (Akeman et al., 2019). Through these activities, students learn to manage setbacks positively, maintain motivation during pressure, and adapt to change skills that are crucial for both academic success and future career development.

3.2 Training for Educators

Educators play a central role in recognizing and alleviating student stress. Their awareness of students' emotional well-being is crucial, as early identification of stress symptoms allows timely intervention and support. Workshops for lecturers can equip them with tools to create supportive environments, implement relaxation techniques like Progressive Muscle Relaxation (PMR), and connect students with resources (Palkar et al., 2021; Jyothimol & Lobo, 2020). Such training helps educators foster a classroom atmosphere that encourages open communication, empathy, and psychological safety, which in turn promotes better learning outcomes. By modelling resilience, educators not only support students but also enhance their own well-being. When lecturers demonstrate positive coping strategies and emotional balance, they set a powerful example for students, reinforcing the importance of maintaining resilience and mental health in both academic and personal contexts.

3.3 Collaboration with Counselling Services

Stronger integration between entrepreneurship courses and university counselling services can normalize help-seeking behavior and provide professional support. Such collaboration allows students to view counselling not merely as a remedial service but as an essential component of their personal and professional development. At Universiti Utara Malaysia (UUM), the Counselling and Career Centre already offers a range of services that address stress, crisis, and personal challenges through individual and group sessions. By aligning these existing services with entrepreneurship education, students can receive psychological support while simultaneously developing resilience and coping strategies relevant to entrepreneurial challenges. Embedding mental health services within academic contexts ensures students have timely access to assistance and promotes a culture of well-being (Slijepčević & Zuković, 2021). This approach not only enhances students' emotional readiness to face uncertainty but also reinforces the university's commitment to holistic education that balances academic excellence with mental wellness.

3.4 Structured Intervention Across the Semester

Building on the literature, a holistic and structured approach is essential to strengthen students' resilience and manage stress effectively throughout their entrepreneurship education journey. Integrating such initiatives within the academic semester allows support to be provided at the right stages of student development. A semester-long framework is recommended, with phased interventions:

Early semester:

At the beginning of the semester, students often experience a mix of excitement and uncertainty as they are introduced to entrepreneurial tasks and new learning expectations. This phase provides an ideal opportunity to build resilience through workshops, peer-sharing circles, and growth mindset activities that help students develop confidence, adaptability, and a positive outlook toward challenges.

Mid-semester:

This period marks the transition from planning to execution, as students begin implementing their business ideas while also managing academic assessments from other courses. The combination of deadlines, group coordination, and decision-making pressure can significantly increase stress and affect cognitive performance if not managed effectively. Therefore, it is crucial to manage stress actively through mindfulness practices, effective time management, and emotion regulation techniques that promote focus and composure under pressure.

End of semester:

As the semester concludes, students often encounter cumulative fatigue from continuous academic and entrepreneurial demands. Reflection activities become essential during this stage to sustain resilience and prevent burnout. Strategies such as gratitude journaling, peer support systems, and reflective discussions can help students process their experiences, acknowledge personal growth, and maintain motivation for future entrepreneurial endeavours.

This framework complements previous findings that emphasize the importance of embedding stress management and resilience-building within the curriculum (Amanvermez et al., 2023; Akeman et al., 2019). It also aligns with the counselling and support services already available at UUM, which provide psychological guidance and promote student well-being. By synchronizing academic and counselling efforts, this structured approach mirrors the natural progression of stress throughout the semester while equipping students with lifelong coping strategies to handle entrepreneurial challenges and future career demands.

4. CONCLUSION

Entrepreneurship education plays a crucial role in developing future innovators and equipping graduates with the skills needed to face uncertain career environments. However, the growing academic and practical demands of entrepreneurship courses also expose students to considerable stress. Within this context, resilience becomes a vital personal competency that supports students' psychological well-being and academic success.

This conceptual paper highlights the importance of integrating stress management and resilience-building initiatives into entrepreneurship education. The proposed framework—which includes student seminars, educator training, collaboration with counselling services, and structured interventions throughout the semester—provides a holistic approach to supporting students' mental health and learning outcomes. By embedding these practices into the curriculum, higher education institutions can promote balanced development, where students not only gain entrepreneurial knowledge and skills but also cultivate emotional strength and adaptability.

Ultimately, fostering resilience in entrepreneurship education contributes to the creation of well-rounded graduates who are capable of managing challenges both in academia and in their future ventures. Such integration aligns with the broader goals of sustainable education and supports Sustainable Development Goal 3 (SDG 3) on good health and well-being.

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Paper ID: 17

Developing an Integrated Zakat Health Aid Dashboard for Asnaf: Strengthening Zakat Institutions through Digital Innovation

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Abstract

The rising cost of healthcare continues to burden low-income Muslim communities, particularly those categorized as *asnaf*. Although zakat institutions provide medical assistance, their focus remains predominantly on curative measures, overlooking preventive and educational aspects of health. This study introduces the *Integrated Zakat Health Aid Dashboard*, a digital model designed to enhance the efficiency, transparency, and inclusivity of zakat-funded healthcare support. Adopting a qualitative approach, the research was conducted in three phases: literature review and stakeholder interviews, strategic framework development and dashboard design, and expert validation. Findings highlight key challenges, including complex application processes, weak inter-agency communication, and the absence of integrated health data systems. The proposed dashboard addresses these gaps through real-time data management and improved stakeholder coordination. This initiative supports Sustainable Development Goal 3 (Good Health and Well-being) by promoting a more transparent, data-driven, and community-empowered approach to zakat health management.

Keywords
Zakat-Based Healthcare Management, Asnaf Welfare, Digital Dashboard Innovation, Islamic Social, Sustainable Development Goal 3 (Good Health and Well-being)

1. INTRODUCTION

The increasing cost of healthcare is a major global concern, particularly in Malaysia, where the burden disproportionately affects low-income populations. The per capita out-of-pocket health expenditure for Malaysia was estimated to be US$41.47 in 1995 and increased to US$160.91 in 2014 (WHO, 2016). This escalation places immense strain on vulnerable Muslim communities who rely on zakat assistance to meet medical expenses. Although zakat institutions provide financial aid for treatments, dialysis, and chronic illness, the support seldom extends to preventive care, health education, or wellness promotion (Kefeli et al., 2017).

The provision of healthcare support through zakat represents a critical intersection between Islamic social finance and public health equity. As healthcare costs continue to rise, traditional zakat mechanisms face mounting pressure to deliver assistance efficiently and equitably. Despite their long-standing role in poverty alleviation, most zakat institutions still depend heavily on manual record-keeping, paper-based applications, and non-standardized reporting structures. These practices often result in inefficiencies that compromise the timeliness and fairness of aid delivery. Consequently, there is a growing call for zakat organizations to embrace technological innovation as a means of strengthening institutional governance and enhancing their capacity to address emerging socio-economic challenges in healthcare provision.

Digital transformation presents a unique opportunity to modernize zakat management practices in alignment with contemporary governance standards. Technologies such as data analytics, cloud computing, and dashboard visualization can be leveraged to facilitate real-time decision-making, automate data verification, and ensure transparent fund allocation. Within this context, a digital zakat health aid system not only reduces administrative redundancy but also empowers institutions to monitor outcomes more effectively. More importantly, such innovations promote accountability to both donors and recipients, thereby reinforcing the credibility and sustainability of zakat institutions as socially responsible entities contributing to national health objectives.

Moreover, the integration of digital systems into zakat health aid management aligns with Malaysia's broader aspirations for a data-driven public sector under the MyDigital blueprint and Shared Prosperity Vision 2030. By harmonizing zakat operations with national digital ecosystems such as MySalam and the Social Welfare Department's e-Kasih database, institutions can enhance interoperability and strengthen cross-sector collaboration. This alignment enables comprehensive tracking of beneficiaries, minimizes duplication of assistance, and enhances data transparency across agencies. Hence, the establishment of an Integrated Zakat Health Aid Dashboard is not merely a technological upgrade but a strategic reform that redefines the governance of Islamic social finance for inclusive and sustainable healthcare delivery.

On the other hand, the management of zakat health assistance in Malaysia faces significant challenges due to bureaucratic procedures, fragmented data systems, and weak inter-agency coordination. Lengthy application processes, inconsistent databases, and poor information sharing between zakat institutions, hospitals, schools, and welfare agencies hinder timely and equitable aid distribution. These inefficiencies lead to delays, duplication of assistance, and difficulty in assessing program impact, ultimately reducing the effectiveness of zakat in addressing the health needs of the asnaf community. The *Integrated Zakat Health Aid Dashboard* was conceived as an innovative solution to bridge these gaps. The model seeks to transform the traditional zakat distribution process by integrating digital technologies that streamline applications, centralize data, and foster communication between stakeholders including zakat officers, medical practitioners, and community leaders. By aligning with SDG 3, this research advocates a holistic and sustainable approach to healthcare delivery among *asnaf*.

2. LITERATURE REVIEW

Zakat, as a pillar of Islamic social finance, plays a vital role in alleviating poverty and promoting social justice. Prior studies have established its effectiveness in improving welfare among *asnaf* (Ahmad & Wahid, 2020; Johari, Alias, & Shamsudin, 2019). However, its role in healthcare has been underexplored. While Canada's universal healthcare system demonstrates equitable access through national insurance (Dunlop, Coyte, & McIsaac, 2000), Malaysia continues to struggle with service gaps including long waiting times and inconsistent access for rural populations (Ghafari et al., 2014). Ahmad and Hassan (2021) assert that zakat institutions can complement government healthcare initiatives by funding preventive programs, especially for chronic illnesses. Yet, inefficiencies persist in application processes, inter-agency communication, and data integration (Yaacob & Saad, 2022). The lack of a unified health aid monitoring system limits transparency and evaluation of impact. Hence, the proposed dashboard offers a digital governance mechanism to improve accountability and optimize resource allocation.

In recent years, the integration of digital technology within Islamic social finance has become a prominent theme in the discourse on institutional efficiency and transparency. Studies by Abdullah and Rahman (2021) and Hasan and Siraj (2022) emphasize that digital platforms can revolutionize zakat management by enhancing data accuracy, transparency, and accessibility for both administrators and beneficiaries. These technologies allow for real-time monitoring and better coordination among stakeholders, which is particularly crucial in healthcare-related aid where time-sensitive interventions can determine health outcomes. Moreover, digital transformation facilitates the automation of data verification, thereby reducing administrative errors and preventing fraudulent claims, ensuring that zakat funds are channeled effectively toward legitimate recipients.

The application of digital systems in zakat management also aligns with the principles of Maqasid al-Shariah, particularly the preservation of life (*hifz al-nafs*) and wealth (*hifz al-mal*). According to Mahomed and Ismail (2020) and Rahman, Noor, and Wahab (2021), technology-enhanced zakat systems contribute to these objectives by promoting efficient distribution processes and reducing resource wastage. In the healthcare domain, digitized zakat platforms have shown potential in improving case management for chronic illnesses through the centralization of patient data and monitoring of medical aid disbursement. Such systems enable better policy planning and evaluation, ensuring that the provision of zakat for health purposes is not merely reactive but part of a structured, sustainable welfare framework guided by Islamic ethical principles.

Furthermore, the incorporation of digital governance mechanisms into zakat-based healthcare assistance resonates with the global shift toward data-driven decision-making in public sector management. Bilodeau and Potvin (2016) highlight that adopting digital analytics in social welfare programs enhances the ability to track performance metrics and assess long-term impacts. Similarly, Umar and Abubakar (2021) argue that digital zakat systems, particularly during crises like the COVID-19 pandemic, can ensure continuity and resilience in service delivery through automated disbursement and online application systems. In Malaysia, such innovations are in line with national agendas promoting smart governance and sustainable digital transformation, reinforcing the relevance of developing an Integrated Zakat Health Aid Dashboard as a model of effective digital social finance governance.

3. METHODOLOGY

This study adopts a qualitative and exploratory research design structured across three interrelated phases, each building upon the preceding one to ensure methodological depth and conceptual coherence. The first phase, Situational Assessment and Data Gathering, focused on identifying the prevailing challenges and inefficiency within health-related zakat distribution systems. A comprehensive literature review was conducted to examine existing models of zakat governance, digital transformation in Islamic social finance, and healthcare aid mechanisms. Complementing this desk research, a series of semi-structured interviews were carried out with diverse stakeholders, including zakat recipients, medical officers, school representatives, and community leaders. These interviews sought to capture firsthand experiences, perceptions, and systemic barriers in accessing zakat health assistance. Data were transcribed, coded, and analyzed using open coding in Atlas.ti, enabling the emergence of conceptual categories that reflect the underlying issues in coordination, transparency, and service delivery.

In the second phase, Framework Development and Strategy Formulation, insights derived from the qualitative data were synthesized to construct a conceptual framework that integrates the principles of Industry 4.0 including system integration, data interoperability, and real-time analytics within the zakat health aid ecosystem. This phase emphasizes aligning technological capabilities with the ethical and operational dimensions of zakat administration. The framework proposed strategies to enhance inter-agency collaboration, streamline documentation processes, and improve eligibility assessments for beneficiaries. By embedding technological components into governance structures, this phase laid the foundation for a more transparent and data-driven model of health zakat management, aligning with the broader objectives of sustainable Islamic social finance.

The final phase, Dashboard Design and Validation, translated the conceptual framework into a functional prototype of the Integrated Zakat Health Aid Dashboard. Drawing from the thematic insights of the earlier phases, the dashboard was designed to facilitate efficient data management, automate reporting, and provide real-time monitoring of aid distribution. Validation was conducted through expert reviews involving zakat administrators, Islamic finance scholars, and IT professionals, ensuring that the model met both operational and ethical standards. The evaluation focused on usability, data security, scalability, and compliance with zakat governance principles. Feedback from these experts was incorporated to refine the model, resulting in a validated dashboard concept capable of enhancing transparency, accountability, and service effectiveness in the administration of health zakat.

4. FINDINGS AND DISCUSSION

4.1 Current Practices in Zakat Health Assistance

In Malaysia, zakat institutions provide both one-off and recurring health assistance to support the medical needs of the asnaf community. One-off assistance typically covers major medical expenses such as surgeries, medical devices, and emergency treatments, whereas recurring monthly aid is allocated to patients suffering from chronic illnesses such as diabetes, hypertension, and kidney failure. Despite these noble efforts, the administrative procedures remain highly bureaucratic and time-consuming. Applicants are often required to secure multiple endorsements and supporting documents before their applications can be processed, resulting in significant delays. While emergency cases are usually approved within 24 hours, non-urgent applications may take up to a week or longer to receive a decision (Sukeri, Hanafiah, & Wahid, 2017). Furthermore, the absence of standardized data-sharing mechanisms between zakat institutions, hospitals, and social welfare agencies has led to fragmented information systems, causing duplication of aid and delayed fund disbursement.

4.2 Role of Schools and Community Networks

Schools and community organizations play a pivotal role as grassroots intermediaries in identifying families who are eligible for zakat-based health assistance. Teachers, *ketua kampung* (village heads), and local non-governmental organizations often serve as trusted informants who verify the socioeconomic conditions of applicants and help channel information to zakat authorities. However, participants in the study reported that inconsistencies and inaccuracies in databases such as the *Aplikasi Pangkalan Data Murid* (APDM) often hinder the efficiency of targeting mechanisms. These data discrepancies complicate the verification of household income and may result in either exclusion or duplication of aid. Consequently, the integration of digital linkages between educational systems and zakat management platforms is essential to improve the accuracy, transparency, and timeliness of health aid distribution, ensuring that assistance reaches those most in need.

4.3 Strategic Challenges

The findings reveal three major strategic challenges in the current management of zakat health assistance. First, procedural complexity continues to deter many potential beneficiaries, as redundant documentation and prolonged verification steps create unnecessary administrative burdens. Second, communication gaps between hospitals, zakat officers, and other welfare agencies obstruct the flow of critical information, delaying aid delivery in urgent medical situations. Third, the absence of integrated data systems limits the ability of institutions to monitor aid distribution, assess program outcomes, and conduct impact evaluations. Without a centralized and interoperable database, zakat institutions struggle to ensure accountability and measure the long-term effectiveness of their interventions.

4.4 Dashboard Solution

To address these structural and operational inefficiencies, the Integrated Zakat Health Aid Dashboard is proposed as a holistic digital solution that consolidates multiple data streams into a single, interconnected platform. The dashboard integrates records from zakat institutions, hospitals, schools, and social welfare agencies, enabling real-time data sharing, automated verification, and cross-agency coordination. It provides tools for tracking applications, monitoring fund disbursement, and generating analytics for policy decision-making. By incorporating features such as digital identity verification, beneficiary profiling, and performance dashboards, the system enhances transparency, efficiency, and accountability in the distribution of health zakat. Ultimately, this integrated digital ecosystem transforms zakat governance into a proactive, data-driven model that supports equitable and sustainable healthcare assistance for the asnaf community.

5. PROPOSED STRATEGIES FOR ENHANCEMENT

To strengthen the ecosystem of zakat-based health aid, greater transparency and community engagement are essential. Institutions should communicate clearly with applicants about the reasons for approval or rejection to promote accountability and trust. At the same time, establishing a network of Zakat Volunteers can ensure continuous support through regular home visits and emotional or mental health assistance. This community-based approach not only helps monitor beneficiaries' well-being but also fosters a sense of shared responsibility within society.

Equally important is the need for strategic partnerships and innovation in aid delivery. Collaboration with healthcare providers such as clinics, hospitals, and pharmacies can enable voucher-based assistance systems, similar to Pahang's partnership with the National Heart Institute (IJN). In addition, introducing a zakat-backed health takaful scheme would provide more sustainable coverage for patients with chronic diseases. Such partnerships can expand access to treatment while reducing the financial burden on both patients and zakat institutions.

Finally, digital integration and public awareness play a crucial role in transforming the zakat health aid landscape. By linking zakat databases with national systems like MySalam, e-Kasih, and JKM, eligibility checks can be automated and more data-driven, minimizing redundancy and ensuring aid reaches those most in need. Complementing this, mosque-based programs and community forums can raise awareness about preventive health and encourage healthier lifestyles. Collectively, these strategies aim to shift zakat health assistance from a reactive, short-term relief mechanism to a proactive, preventive, and data-informed model that supports long-term community well-being.

6. IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT GOALS

The proposed dashboard directly supports SDG 3 (Good Health and Well-being) by promoting equitable access to healthcare services, particularly for marginalized and vulnerable populations who often face financial and logistical barriers to treatment. By centralizing data on zakat-based health aid, the dashboard enables more efficient identification of beneficiaries, better tracking of assistance provided, and improved coordination between healthcare providers and zakat institutions. This ensures that health support is distributed fairly, timely, and in line with real community needs ultimately contributing to improved overall public health outcomes.

Beyond healthcare, the initiative also advances SDG 10 (Reduced Inequalities) by addressing socio-economic disparities in access to medical support. Through data-driven targeting, the system minimizes duplication of aid and ensures that limited zakat resources are directed toward those most in need, regardless of geographic location or social background. By empowering underserved communities, the dashboard helps reduce the structural inequalities that often hinder access to essential health services.

Furthermore, the project aligns with SDG 17 (Partnerships for the Goals) by fostering collaboration between zakat institutions, healthcare providers, government agencies, and digital platforms. This inter-institutional cooperation not only strengthens the governance of zakat distribution but also enhances the integration of social welfare systems nationwide. The digitalization of zakat operations enhances transparency, accountability, and public trust, while contributing to Malaysia's broader digital transformation agenda under the national digital economy framework. In essence, the dashboard represents a convergence of faith-based social finance and technological innovation in advancing sustainable and inclusive development.

7. CONCLUSION

he Integrated Zakat Health Aid Dashboard embodies a transformative innovation in the management and governance of zakat within the realm of Islamic social finance. By leveraging digital technologies such as data analytics, automation, and integrated reporting systems, the dashboard facilitates a more transparent, efficient, and evidence-based approach to distributing health-related assistance to the asnaf community. This digital integration minimizes administrative inefficiencies, reduces duplication of aid, and ensures that resources are channeled toward those most in need in a timely and verifiable manner.

Beyond its operational advantages, the dashboard reinforces the principles of accountability, transparency, and inclusivity that are central to Islamic financial ethics. By providing real-time insights into fund allocation, beneficiary profiling, and health outcomes, zakat institutions can make more informed decisions and demonstrate measurable social impact. This data-driven approach also fosters public trust and donor confidence, as contributors can observe how their zakat contributions are being utilized to improve community health and well-being.

Furthermore, the model underscores the strategic role of zakat as a developmental tool rather than a mere charitable transaction. By aligning health aid with national healthcare objectives and Sustainable Development Goals (SDGs), particularly those related to poverty reduction and good health and well-being, zakat can become a catalyst for sustainable socio-economic transformation. The dashboard encourages collaboration between zakat agencies, healthcare providers, and government bodies, creating a cohesive ecosystem that maximizes collective impact.

In conclusion, the implementation of the Integrated Zakat Health Aid Dashboard represents a paradigm shift toward smart zakat management, one that merges religious responsibility with technological innovation and social accountability. Through enhanced coordination, efficient resource utilization, and transparent reporting, the dashboard ensures that healthcare assistance reaches the asnaf community more effectively, thereby strengthening the overall resilience and welfare of society. Ultimately, this initiative exemplifies how digital transformation can elevate zakat from a traditional philanthropic practice to a cornerstone of sustainable and inclusive Islamic social finance.

ACKNOWLEDGMENT

This research was supported by the Ministry of Higher Education (MoHE) Malaysia through the Fundamental Research Grant Scheme (FRGS/1/2019/SS03/UUM/02/2).

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Paper ID: 19

Determinants of Artificial Intelligence (AI) Acceptance among Accountants in Malaysia: An Extended UTAUT Model

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Abstract

For the past several years, Artificial Intelligence (AI) has been transforming the accounting profession by automating routine tasks, enhancing fraud detection, and facilitating data analysis and tax and audit purposes, which have enabled accountants to work more efficiently and effectively. However, past research revealed that the acceptance of AI is still relatively low among accountants in Malaysia. Thus, this study examines the determinants of AI acceptance among accountants in Malaysia by incorporating constructs from the extended UTAUT model as the framework, which are performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) and trust in AI. The data will be collected through a structured questionnaire distributed to accountants in Malaysia from various sectors and analysed using the Statistical Package for the Social Sciences (SPSS). Therefore, this study aims to propose a conceptual framework that explains the determinants of AI acceptance among accountants in Malaysia, utilising the UTAUT framework to identify the variables affecting accountants' intention to use AI and explore the factors influencing the acceptance of AI among accountants in Malaysia. The results of this study will contribute to existing knowledge in the area of AI acceptance and provide insight to policymakers, professional bodies, and organisations, particularly those related to the accounting profession in Malaysia.

Keywords
Artificial Intelligence (AI), Accountants, Unified Theory of Acceptance and Use of Technology (UTAUT), Technology Acceptance, Malaysia

1. INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force in today's digital economy, reshaping industries through enhanced efficiency, automation, and data-driven decision-making. Its growing integration across sectors such as business, finance, and public administration reflects its role as a catalyst for innovation and productivity (Espina-Romero, 2023; IDC, 2024). Within the accounting profession, AI is revolutionising how tasks are executed: from automating routine operations to improving accuracy and strategic insights. Accountants now increasingly rely on AI for communication, workflow automation, and analytical support, allowing them to focus on higher-value services (ICAEW, 2024; Karbon, 2024). However, despite the efficiency and competitive advantages AI offers, concerns persist regarding data security, ethical risks, and insufficient training, all of which continue to shape adoption behaviour among accounting professionals (Kanaparthi, 2024).

Recent scholarly interest has highlighted the growing significance of AI in accounting. A bibliometric analysis by Tlili (2025), which examined 475 studies published between 2014 and 2024, identified three dominant themes: AI's role in improving accounting processes, its transformative impact on auditing and financial reporting, and challenges associated with implementation. These findings illustrate the evolving academic perspective that recognises AI as a driver of innovation while emphasising the need for further research to understand the determinants influencing its acceptance in the accounting domain. In Malaysia, however, AI adoption remains at a developing stage. While government initiatives such as the National AI Roadmap and Industry 4.0 agenda encourage digital transformation, adoption within the accounting profession is still inconsistent (Lee & Tajudeen, 2020). Although accountants exhibit moderate awareness and a high willingness to use AI due to perceived performance benefits (Ali & Samsudin, 2024), barriers such as limited expertise, inadequate training, and concerns over data integrity continue to impede its full implementation (Lim & Seng, 2024; Shamsudin et al., 2025).

Despite the growing discourse on digital transformation, limited empirical research has examined what drives or hinders AI acceptance among Malaysian accountants. Prior studies have primarily focused on other industries, leaving an evident gap in the accounting context. Therefore, this conceptual paper proposes a framework that can serve as the foundation to investigate the determinants influencing the acceptance of Artificial Intelligence (AI) among accountants in Malaysia using an extended Unified Theory of Acceptance and Use of Technology (UTAUT) model. By incorporating constructs such as trust alongside traditional UTAUT factors, which are performance expectancy, effort expectancy, social influence, and facilitating conditions, this study provides a comprehensive framework for understanding AI acceptance. The findings are anticipated to extend theoretical understanding of technology acceptance while offering practical insights for policymakers, professional bodies, and organisations to strengthen AI readiness within Malaysia's accounting sector. Therefore, the primary objective of this paper is to explore the factors that influence the acceptance of AI among accountants in Malaysia.

2. LITERATURE REVIEW

The following section is separated into three main sections. Firstly, this study will review the definition of AI. Moving on to the next section, this study will highlight past research on how AI is being used in the accounting world, its implications for accountants globally and in Malaysia, and the barriers that accountants face when implementing AI in their daily tasks. For the third and last section, literature regarding the variables of this study, which are based on the extended UTAUT model, will be discussed.

2.1 Artificial Intelligence (AI) Definition

Artificial Intelligence (AI) is defined as the ability of machines to imitate human cognitive functions, such as learning, reasoning, and making decisions (Copeland, 2024). Similarly, other researchers have defined AI as a technology that enables machines to perform tasks that were once only accomplished through human intelligence (Duggal, 2023; Gulen, 2023). However, a systematic literature review by Kelly et al. (2023) noted that the definitions of AI are dynamic and vary across different professions, depending on the context. Furthermore, AI also has key subfields that are being applied, some of which are machine learning, natural language processing, robotic process automation, deep learning and data analytics (Tlili, 2025; Thanasas & Kampiotis, 2024; Kanaparthi, 2024), all of which act as power tools that give the machine and tools the ability to have some human intelligence. Therefore, for this study and within the context of accounting, AI is defined as technological tools that can enhance accountants' efficiency, accuracy, and decision-making, which is in line with the definition given by ICAEW (2024), which states that AI is a tool that can create outputs far more accurate and efficient compared to what normal humans can on a task-by-task basis.

2.2 AI Implementation in Accounting

Generally, AI has been applied in six areas in accounting: auditing, financial reporting, transaction processing, risk and fraud detection, tax and planning, and, lastly, audit documentation and explainability

(ICAEW, 2024; Tlili, 2025; Sharshouh, 2025). In other words, AI could do continuous auditing, audit sampling, automated report generation, real-time analytics, capturing and processing invoices, identify high-risk cases, tax data extraction, and so much more (ICAEW, 2024; Tlili, 2025; Sharshouh, 2025), all of which enhance efficiency and decision quality (Hussin et al., 2024). As a result, it is anticipated that the accounting profession will undergo a shift, transitioning from transaction processing, such as manual record-keeping, to higher-value advisory work, including data interpretation and strategic analysis (Tlili, 2025; ICAEW, 2024; Karbon, 2024).

In Malaysia, the government and the professional body of accounting also encourage the adoption of AI among the citizens. Initiatives from the government, such as the MIA Digital Technology Blueprint and the National Artificial Intelligence Roadmap (2021–2025), have been established to encourage individuals, particularly accountants, to adopt digital tools. Despite all these efforts and the benefits that AI can provide for accountants to continue progressing in their profession, the fact remains that AI implementation among accountants in Malaysia is still in its early stages (Lee & Tajudeen, 2020). However, there are some clear indications that AI is currently being implemented by accountants in Malaysia, such as for invoice automation, risk management, Robotics Process Automation (RPA), and data analytics (Lee & Tajudeen, 2020; Razak & Ismail, 2022; Suppiah & Arumugam, 2023). All of these AI applications have led to notable improvements in efficiency and productivity for accountants (Lee & Tajudeen, 2020; Alnaimat et al., 2025).

Nonetheless, more recent study done in Malaysia still mentioned that accountants in Malaysia still showing moderate level of AI awareness (Ali & Samsudin, 2024), especially since many MSMEs in Malaysia are still in the initial phase of implementing AI as they have not had any grasp yet towards the potential benefits of AI that could bring to their business (Lim & Seng, 2024), which also lead to the lack of AI implementation among accountants in Malaysia MSMEs. Besides the lack of awareness among accountants in Malaysia, Shamsudin et al. (2025) also mentioned that the shortage of accounting experts and concerns regarding the quality of the financial reports generated by AI also contribute to the slow adoption of AI among accountants globally, hindering them from fully utilising the potential of AI. Therefore, it is essential to understand the factors that could influence the acceptance of AI among accountants in Malaysia. This study will contribute to finding out what hinders the accountants, specifically in Malaysia, from accepting AI and applying it to their daily tasks, by using the extended UTAUT model that will be explained in detail in the following section.

2.3 Determinants of Intention to Accept AI

According to Kelly et al. (2023), their systematic literature review regarding the topic of AI acceptance concluded that the majority of the research topics regarding the individual intention have used the Technology Acceptance Model (TAM) (Davis, 1985) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). However, due to the rapid advancement of AI devices, the predictability of the TAM has been reduced (Sohn & Kwon, 2020); therefore, this study will utilise the UTAUT model as its base. UTAUT was formulated based on the previous eight theoretical studies related to the acceptance model, including the TAM (Venkatesh et al., 2003). The UTAUT also suggests that performance expectancy, social influence, effort expectancy, and facilitating conditions predict behavioural intentions, which informs use behaviour (Venkatesh et al., 2003). Additionally, this study will extend the UTAUT by incorporating trust in AI as a new construct. Each of the constructs will be illustrated below.

Performance Expectancy (PE)
PE is defined as the degree to which an individual believes that using the system will help them perform better in their task (Venkatesh et al., 2003). In the context of accounting, accountants are more willing to accept AI if they perceive that it will enable them to complete their tasks more effectively and efficiently (Ali & Samsudin, 2024). It is also concluded that this variable is the strongest cause of behavioural intention

among accountants to implement AI (Ali & Samsudin, 2024; Venkatesh et al., 2003). Hence, Hypothesis 1 (H1) was developed:

H1: There is a positive relationship between PE and the intention to adopt AI

Effort Expectancy (EE)

EE is defined as the degree of ease for an individual to use the system (Venkatesh et al., 2003). In terms of accounting, when the accountants perceive that the system is easy to use, they are more likely to behave positively towards the system. Moreover, past studies also confirmed that EE do have a significant positive relationship among accountants and auditors (Damerji & Salimi, 2021). Hence, Hypothesis 2 (H2) was developed:

H2: There is a positive relationship between EE and the intention to adopt AI

Social Influence (SI)

SI is defined as the degree on an individual perceive that important figures in their lives believe that they should use the new system (Venkatesh, 2003). From the perspective of accountants, the opinions from the college, upper management or even the organizational culture could significantly affect the acceptance of AI among accountants (Venkatesh, 2003).

Hence, Hypothesis 3 (H3) was developed:

H3: There is a positive relationship between SI and the intention to adopt AI

Facilitating Conditions (FC)

FC is defined as the level at which an individual believes that the organisation and technical infrastructure exist to help them use the system (Venkatesh et al., 2003). When accountants believe they have received proper training, a good organisational infrastructure, and appropriate technical support, they are more willing and have a more positive attitude towards implementing AI (Venkatesh et al., 2003). Hence, Hypothesis 4 (H4) was developed:

H4: There is a positive relationship between FC and the intention to adopt AI

Trust in AI

Trust in AI enables the user of AI, in this case, accountants, to believe that AI can help them achieve their goals (Chang et al., 2017). The reason trust is added as an extension to the UTAUT is that past research has highlighted that trust is a significant antecedent in predicting users' behavioural intentions (Choung et al., 2022). Kelly et al. (2023) also noted that most studies investigating individual acceptance would use trust to extend the theory employed in their studies. As such, trust in AI also has a significant driving factor in the acceptance of AI (Kelly et al., 2023). Hence, Hypothesis 5 (H5) was developed:

H5: There is a positive relationship between trust in AI and the intention to adopt AI

2.4 Conceptual Framework

Thus, this study suggests that performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) and trust in AI all have significantly and positively affects the behavioural intention of accountants to accept AI.

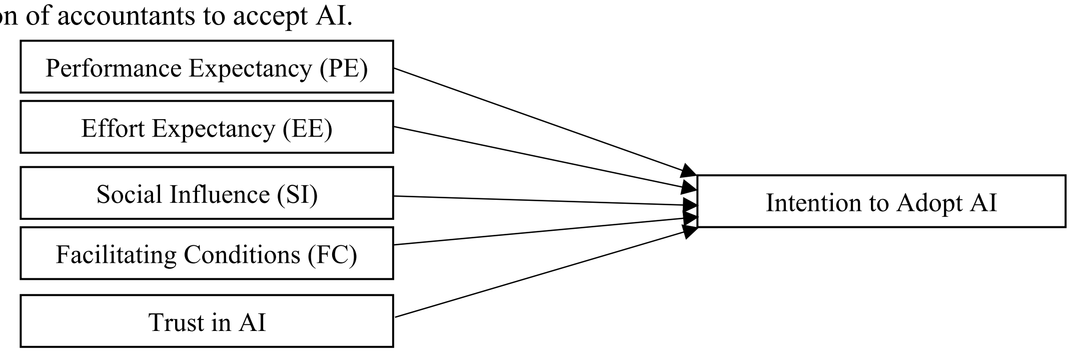

Figure 1: Conceptual Framework

3. METHODOLOGY

This study employs a quantitative research design, whereby a cross-sectional survey strategy was used as the data will be collected at a single point in time to examine the relationship between the variables of this study. The framework of this study is based on the extended UTAUT constructs: PE, EE, SI, FC, and trust in AI, which are used to investigate the determinants of AI acceptance. The data will be collected from accountants in Malaysia, which includes accountants employed in government agencies, ministries, statutory bodies, accounting firms, financial institutions (such as banks), and corporations across various industries. Furthermore, this study employs a probability sampling method, specifically stratified random sampling, to ensure balanced representation of accountants across different sectors since the sample size will be around 200 to 300 respondents, supported by Krejcie and Morgan's (1970) sample size determination table, whereby a minimum of 200 to 300 respondents is considered sufficient for social science research and to achieve reliable statistical power in multiple regression analysis. The data will be gathered through an online self-administered questionnaire, distributed via Google Forms, ensuring convenience, cost-effectiveness, and wide geographical reach across Malaysia. Responses are rated on a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree, allowing respondents to indicate the degree of agreement with each statement. Lastly, descriptive analysis will then be done on the collected data, and the relationship will be analysed using the Statistical Package for the Social Sciences (SPSS).

4. EXPECTED CONTRIBUTIONS

Understanding the determinants that caused or influenced the accountants to accept AI can provide significant, valuable insights based on the construct from extended UTAUT: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) and trust in AI. By identifying the determinants, the organisation can design specific targeted strategies towards the accountants, such as training, awareness, or even communication programs. Therefore, these strategies will lead the accountants to develop digital competencies and trust in AI, which will enable them to perform better in their tasks and make decisions. Not only that, but the expected findings for this study could also serve a guideline for the policymakers and professional bodies of accounting in Malaysia such as MIA and MDEC to developed their own strategies, which will help to align the accounting profession with the nation objective of MyDigital and IR 4.0 initiatives Moreover, the educational institutions will also benefit from this research, by serving as data to improve and update the accounting curricula such as integrating AI literacy, data analytics and ethical consideration.

From the perspective of academia, this study will contribute to enriching the existing body of knowledge by identifying gaps in AI acceptance literature, such as knowledge and contextual, theoretical, and population gaps. Furthermore, by extending the original UTAT model through adding trust in AI as an additional construct, this will help to capture the unique nature of AI, such as autonomy and transparency that were not addressed in the original UTAUT. Besides, this study will also contribute by providing empirical evidence, particularly in Malaysia, where studies regarding the AI acceptance among accountants are still scarce. Lastly, the finalised quantitative model used in this study can serve as a reference for future studies in a similar professional context related to AI acceptance.

5. CONCLUSION

This paper concludes with a conceptual framework that investigates the behavioural intention of accountants to accept AI using the extended UTAUT model, which includes performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) and trust in AI to determine the factors that influence the accountants to accept AI. It is expected that this study will provide information on the problems causing the low acceptance of AI among accountants in Malaysia, which leads to low AI implementation among them. However, it also noted that this study has several limitations. The current study focuses on accountants from different sectors across Malaysia. Thus, the results could not be generalised to other professions. Another limitation of this study is that the findings will only reflect the Malaysian context. Thus, it implies that other countries may have obtained different results due to differences in their cultural and environmental conditions.

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