Beyond the Numbers: Exploring the Perspectives of Students on the Integration of Data Analytics in Tax Law Education

Zuriadah Ismail¹, Rohaila Yusof², Nurhanie Mahjom³, Mohamad Ali Roshidi Ahmad⁴ and Anis Suriati Ahmad⁵

Abstract
Undoubtedly, the integration of data analytics into the accounting curriculum has a multitude of advantages. Nevertheless, it is vital to ascertain the suitable array of talents to incorporate into the curriculum. Therefore, the primary objective of this study is to investigate the specific data analytics abilities that are deemed necessary by a sample of 100 accounting students. The skills were evaluated through document analysis in the field of taxation law, where students were taught how to use data analytics techniques and tools using a case sample. The main result shows a wide range of terms related to data analytics, many of which are frequently used in the data-focused industry. These encompass the examination of quantitative data through the application of statistical methodologies for the goals of description, diagnosis, prediction, and prescription. The significance of understanding taxation law requirements and data analytics in classroom activities is underlined by a case study employing Excel spreadsheets. The ability to comprehend legal concepts allows students to develop a solid understanding of the essential framework of the law, leading to an improvement in their general competency. Further, based on student feedback emphasizes the importance of incorporating data visualisation within the data analytics procedure which is consistent with the suggestions put forth by professional bodies into tax curriculum. The results imply to the significance of harmonising accounting curricula with the industry’s requirements. This highlights the necessity for additional academic examination into the dissemination of information and the choice of appropriate evaluation elements for enhancing data analytics skills.

Keywords: Student Skills, Legal-Based Course, Case Sample, Mixed Methods

INTRODUCTION
According to a recent survey conducted by Deloitte Insights, a significant proportion of employers, including 90%, acknowledge the importance of graduates possessing digital technology skills. Nevertheless, it is alarming to note that a significant proportion of current employees, specifically 70%, exhibit a deficiency in their competency within this particular field (Pelster, Stempel & Van der Vyver, 2017). Therefore, it is crucial for accounting education providers to give students with skills that are applicable to the requirements of the 21st century. The incorporation of data analytics into the accounting curriculum is increasingly being embraced, while there are obstacles in effectively executing these modifications. Professional accounting associations have emphasized the importance of providing accountants with data analytics capabilities, leading to the development of recommendations for data analytics in continuing professional education. In addition, institutions of higher education are actively endeavoring to integrate data analytics into their academic programmes.

In order to adequately meet the requirements, it is important for students to exhibit a significant degree of personal competence. Designing the curriculum in a manner that is appropriate to both industrial and community contexts is of utmost importance. The achievement of this purpose might be realised by incorporating future-oriented content into multidisciplinary electives and academic programmes (Sani, 2019). Scholarly publications, including those authored by Efio (2023), Idris, Al-Okdeh, and Abu Siam (2023), Birt, Safari, and Bicudo de Castro (2023), Calderon, Hesford, and Turner (2022), and Dow, Jacknis, and Watson

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(2021), have all examined similar perspectives. In the present study, Efio (2023) investigates the difficulties faced by the accounting field as a result of technological advancements and the imperative for accountants to possess proficiencies in data analytics, critical thinking, data science tools, and effective communication skills. Consequently, higher education institutions are incorporating data analytics into their accounting curricula, despite the difficulties posed by the need for thorough data analytics training to meet professional certification criteria.

Given the ongoing transformations in the professional realm, it is imperative for accounting graduates to obtain the essential skills required to thrive in the future professional environment. The World Economic Forum 2016 provided insightful insights into the ten essential talents necessary for achieving success in the era of the Fourth Industrial Revolution. According to Omitogun and Al-Adeem (2019), these capabilities encompass a range of skills including problem-solving, critical thinking, creativity, people management, collaboration, emotional intelligence, judgement and decision-making, service orientation, negotiation, and cognitive flexibility. In their study, Birt, Safari, and Bicudo de Castro (2023) examine the potential advantages, obstacles, and influential elements associated with the incorporation of information and communication technology (ICT) and data analytics competencies into the accounting curriculum. The authors specifically concentrate on Australia and New Zealand, emphasising the disparity between university curricula and the demands of professional bodies. This finding suggests a growing acknowledgment of the importance. According to Aziz (2023), it is recommended to conduct further research in order to identify the most effective approach for applying these changes, as many accounting programmes have not fully adopted analytics and big data. In a previous study conducted by Dow, Jacknis, and Watson (2021), a framework was proposed for the integration of data analytics into accounting programmes. This framework was based on the Diffusion of Innovation Theory. The authors suggested the utilisation of freely available tools, inquiries, and cases as effective means to facilitate the incorporation of data analytics into accounting education.

Ensuring sufficient learning opportunities in the field of data analytics and big data is a primary focus within accounting programmes, necessitating the inclusion of these components within the curricula. The analysis of data analytics utilisation in academic courses that integrate the development of information and skills is crucial for problem-solving. Numerous academic publications have been devoted to the analysis of pedagogical techniques (Hite & Hasseldine, 2001) that are grounded in the various characteristics of courses (Craner & Lymer, 1999). Consequently, a novel study trajectory has arisen, emphasising inventive methodologies that have to be incorporated into particular courses, despite research findings suggesting that the utilisation of the internet as a means of delivering instruction is infrequently employed in numerous courses (Craner & Lymer, 1999). This corroborates the proposition for an online educational setting. Therefore, it is imperative that the allocation of instruction and learning opportunities is limited to primary classroom activities.

REVIEW OF EXISTING LITERATURE

The Impact of Data Analytics Initiatives in Accounting Education

Despite the increasing demand for data analytics skills in the employment market, there is a distinct absence of comparable increase in university programmes. A study conducted by Ku Hisam Che Ku Kassim (2014) in Malaysia revealed that accounting graduates demonstrate a deficiency in knowledge and prioritise the enhancement of technical abilities. These findings imply that accounting education providers have neglected to consider the necessary skills and abilities required by the industry. Hence, accounting graduates might face obstacles in their future professional pursuits because of their insufficient knowledge and skills. The implementation of a reformation in the accounting education system is important to effectively tackle this issue, as highlighted in the Halatuju 2: Reassessment Report on Accounting Programme at Public Universities. The main objective of the strategy is to ensure that public universities possess the capacity to generate accounting graduates who can efficiently combine and utilize integrated knowledge and skills from other domains to address the intricacies of the contemporary corporate landscape. The improvement of content and educational approaches has been identified as a means to achieve this objective, despite facing criticism.
From 2006 onwards, the Malaysian Institute of Accountants (MIA), Ministry of Higher Education (MOHE), and educational institutions have undertaken initiatives under the supervision of a committee. These initiatives aim to ensure that accounting programmes provided by local universities are in line with international advancements in the field of accounting. The committee proposed the inclusion of at least three Accounting Information Systems (AIS) courses in the accounting curriculum as part of these activities. According to Ismail (2009), the curriculum of these courses includes subjects such as an introduction to information technology, AIS, and system analysis and design. Subsequently, the MIA implemented the Digital Technology Blueprint in order to provide accountants with the essential expertise and understanding required for the progress in technology. The purpose of this is to endorse the MIA Competency Framework (CFM), which outlines the essential abilities and skill sets that professional accountants should have at various levels of competency. The framework outlined in this study is based on the principles established by the International Accounting Education Standards Board (IAESB). It encompasses several key areas, such as the entry requirements for professional accounting education programmes (IES 1), the initial professional development (IPD) for aspiring professional accountants (IES 2–6), the continuous professional development (CPD) for professional accountants (IES 7), and the professional competence for engagement partners responsible for audits of financial statements (IES 8). The examination of emerging technologies was conducted through roundtables, consultation documents, literature reviews, and surveys. In order to execute these processes, it was necessary to incorporate a range of additional capabilities, including interpretive, analytical, ethical change management, and data handling abilities.

Ernst & Young (2017) emphasised the significance of data analytics proficiency inside the accounting curriculum as a crucial factor in making well-informed business decisions. Hence, the cultivation of a mindset centred on analytics assumes paramount importance in order to maintain relevance. This technique provides a thorough and all-encompassing perspective because there is a significant need for graduates who possess advanced skills in data analytics, which exceeds the existing supply (Baccala & Ponagai, 2018). In addition, it is anticipated that a senior accountant will efficiently handle queries, retrieve relevant data, hold expertise in data analytics methodologies, and skillfully understand and explain analytics results that contribute value to the organisation (Vasarhelyi & Tschakert, 2017). This implies that numerous studies have investigated the substantial influence of data analytics initiatives in the field of accounting education, specifically in terms of their impact on student learning. According to Efio (2023), the integration of data analytics initiatives in accounting education presents numerous advantages in terms of improving the precision of real-time data storage and analysis, hence resulting in more dependable accounting procedures. According to Aziz (2023), the implementation of automation in routine tasks and manual work enhances efficiency, enabling accountants to allocate their attention towards more strategic and value-added activities. Additionally, Idris, Al-Oakdeh, Mahd, and Siam (2023) argue that automation improves decision-making processes by equipping accountants with real-time data and insights, thereby facilitating informed decision-making. In a study conducted by Aziz (2023), it was observed that the curricula of undergraduate accounting programmes in Jordanian universities lacked comprehensive integration of data analytics. According to Losi, Isaacscon, and Boyle (2022), the incorporation of data analytics into the accounting curriculum is considered essential in fostering students' development of strong analytical and critical thinking skills. This programme facilitates the cultivation of critical thinking abilities, proficiency in data science tools, and effective communication skills, all of which are important in the era of digitalization (Idris, Al-Oakdeh, Mahd & Siam, 2023). Additionally, it enriches students' comprehension of industry methodologies. According to Dow, Jacknis, and Watson (2021), the installation and use of data analytics in accounting systems present certain hurdles. These challenges encompass the requirement for adequate training and the resolution of technology implementation obstacles. Additional investigation is required in order to successfully execute these modifications.

The Challenges and Opportunities of Data Analytics in Tax Education

The American Institute of Certified Public Accountants (AICPA) has created a model of tax curriculum (MTC) that incorporates tax courses for all business majors, focusing on tax education in the accounting curriculum structure. The significance of tax knowledge in decision-making and financial reporting is underscored by this model, which highlights the importance of graduates having a thorough comprehension of the fundamental tax
law to effectively apply crucial tax planning ideas (Purcell, Francis & Clark, 2014). It is crucial to prioritise the cultivation of fundamental legal abilities among high-achieving pupils. Several studies have emphasised the difficulties faced by students in acquiring legal knowledge, including those conducted by Martin (2003), Jensen (2018), Bloom (2018), and Schulze (2020). According to Martin (2003), the process of acquiring legal knowledge involves engaging with the extensive, complex, and complicated nature of legal laws. The aforementioned situation leads to a clash between the perceived most successful learning approaches employed by students and the ways that are indeed the most efficient (Schulze, 2018). Consequently, pupils may utilise inefficient study methodologies and encounter inaccuracies in their educational endeavours. Additionally, there is the difficulty of managing the ever-changing and intricate combinations of procedures, texts, and different individuals involved in the legal field (Jensen, 2018). Underrepresented or stereotyped status poses challenges for students, perhaps resulting in feelings of isolation and the reinforcement of stereotypes, ultimately impeding their educational progress (Bloom, 2018).

These factors underscore the challenges faced by students in understanding and resolving legal provisions. One of the contributing factors might be attributed to the intricate and interconnected characteristics inherent in the field of law. The analysis of tax legislation needs a deep understanding of legal terminology, hence requiring precise legal interpretation. Therefore, the use of data analytics is the most appropriate method to efficiently handle the wide range of legal laws and assist in the understanding of intricate legal data. According to Schoenherr and Speier-Pero (2015), it is advisable to provide students with a curriculum that emphasises data analytics. This curriculum should provide students with the necessary abilities to effectively gather, analyse, and evaluate data, hence enhancing their learning experience. In order to facilitate the success of all students in their legal education, it is imperative for course instructors to address students' learning errors, employ effective pedagogical approaches, and establish secure and inclusive learning environments (Darling-Hummord & Holmquist, 2015).

Course instructors and students have challenges when attempting to include data analytical abilities into a taxation law subject and cover a wide range of multidisciplinary issues (Schoenherr & SpeierPero, 2015). Currently, the ability to think critically has become an essential component of the integration tool for student activities. Nevertheless, the primary obstacle faced in this context is to facilitate their acquisition of the fundamental abilities for gathering, scrutinising, and assessing data, as well as to augment their educational journey. The findings align with the research conducted by Henry and Venkatraman (2015) and Aasheim, Williams, Rutner, and Gardiner (2015), wherein both studies emphasised the importance of integrating real-world case studies in data analytics courses that encompass comprehensive datasets, encompassing both structured and unstructured data. Nevertheless, the incorporation of these methodologies into an educational setting can incur significant expenses. An option that might be considered is to employ organised data from publically available sources, while unorganised data can be acquired from online social media platforms (Myers, 2016). In addition, engaging in classroom activities that require students to handle large datasets can be facilitated by using free spreadsheets, which can aid in analysis and enable the exploration of different decision-making possibilities. According to Franklin, Michaele, and Novak (2020), a solid basis in knowledge construction and skills is necessary. The prioritisation of data analytics abilities within the present educational context and classroom environments is of paramount significance, especially when confronted with substantial legal data and a wide range of legal references. The objective of this study is to examine the viewpoint of accounting students regarding their perceived proficiency in data analytics when it comes to learning taxation law.

**METHODOLOGY**

The data utilized in this research study was collected using two methodologies. The primary methodology was performing a thorough examination of documents in order to acquire a comprehensive understanding of data analytics skills. This investigation entailed a comprehensive assessment of pertinent papers and documents produced by professional bodies in the accounting field. This subject mostly focuses on the taxation course. Subsequently, a case study was incorporated into Taxation courses for the academic year of 2022 in order to investigate the whole range of competencies necessary for data analytics. The chosen case study was constructed within the context of a conventional coursework for a taxation course, with a specific emphasis on the subject
of business tax planning. An Excel spreadsheet was utilized to handle the datasets and conduct the necessary
tax analysis in compliance with the applicable legal regulations. In addition, the students were assigned the
responsibility of developing an interactive visualization in order to proficiently communicate their research
outcomes. The main aim of the case study was to assess the extent to which students' technical tax knowledge
aligns with tax legislation in order to facilitate tax analysis. To achieve this objective, a post-case questionnaire
was disseminated, utilizing a five-point Likert scale that spans from 1 (Strongly Disagree) to 5 (Strongly Agree).
To assess the students' perception of the significance of data analytics skills, it was crucial to gather their input
through open-ended questions after completing the questionnaire. The participants were requested to provide
their perspectives on their encounters using Excel for tax analysis and the requisite abilities. The analysis of the
response will be conducted based on the relevant thematic framework.

RESULTS AND DISCUSSION

General Framework for Data Analytics Proficiency

The primary emphasis is focused on the terms Business Analytics, Big Data, and Data Science in order to
effectively handle the purpose related to the whole notion of data analytics competence. Nevertheless, the
terminology employed failed to effectively delineate its precise definition, suggesting that the phrase 'Data
Analytics' is frequently employed to represent a wider range of data-centric professional requirements and
growth prospects. Furthermore, the Fourth Industrial Revolution (IR 4.0) has expedited the requirement for a
fresh set of skills in response to the changing demands and characteristics of employment. The World
Economic Forum (2020) has highlighted the significance of this problem, emphasising the necessity of
retraining the workforce to meet current demands. Therefore, there is a need for a new set of skills in data
analytics to meet the demands in the professional environment. One of the strategies implemented entails the
reorganisation of the educational curriculum to facilitate the suitable cultivation of digital proficiencies
(Caingcoy, 2021). The education curriculum must prioritise the importance of preparing for the ongoing
technological advancements in order to guarantee the success of graduates' professions. The justification for
the relevance of the degree programme is supported by the United Nations Economic and Social Council
(2018).

Several scholarly investigations have suggested the integration of various skill sets with data analytics as a means
to methodically and comprehensively examine quantitative data through statistical techniques, with the aim of
making well-informed decisions and implementing suitable measures (Davenport & Kim, 2013). The
aforementioned procedure entails the integration of data analytics with the analysis of unprocessed data in order
to identify patterns and tackle inquiries within the expansive domain (Clack, Houser, Martin & Ward, 2022).
Hence, data analytics may be classified into fundamental procedures, including descriptive, diagnostic,
predictive, and prescriptive analytics. The data analysis process encompasses various forms of data analytics,
each with distinct objectives and responsibilities. Throughout every stage of this procedure, it is crucial to have
a combination of technical and non-technical skills. Therefore, a comprehensive understanding of both
fundamental and advanced principles in the fields of mathematics and computer science forms the basis.
Furthermore, the cultivation of soft skills, including effective communication, problem-solving abilities, critical
thinking aptitude, collaborative cooperation, and proficient project management, is of paramount importance.

With the ever-changing technological environment that influences society, there is a growing need for proficient
data analytics abilities that can be flexible and presented in different formats. Therefore, it is recommended that
the integration of a data analytics course into the educational curriculum would contribute to the improvement
of students' competence in this domain (Christine, Shaw & Yurko, 2021). The justification for the acquisition
of data analytics skills is supported by the viewpoint that it enhances the employability of individuals seeking
employment (Hesketh, 2000; Velasco, 2012; Humburg & Van der Velden, 2015). Moreover, it has been
contended that the acquisition of knowledge and competencies in the field of data analytics might augment the
competitive advantage of recent graduates within the labour market (Richardson & Shan, 2019). DeFillippi &
Arthur (1994) recommended three skill elements as specific criteria, whereas Fugate, Kinicki, & Ashforth (2004)
provided four elements, and Van der Heijde & Van der Heijden (2006) presented five elements. According to
Akkermans, Brenninkmeijer, Huibers, and Blonk (2013), these frameworks have been later integrated into three distinct components.

From an educational perspective, the acquisition of data analytics skills can be ascribed to Bloom's taxonomy, a hierarchical framework that encompasses both lower and higher order cognitive abilities. According to Bloom, Engelhart, Furst, Hill, and Krathwol (1956), individuals acquire knowledge, comprehend information, and use it in practical contexts at the lower level. Conversely, at the higher level, they utilise the abilities of analysis, synthesis, and evaluation. The acquisition of data analytical skills necessitates the possession of essential talents such as analysis, synthesis, and evaluation. Two approaches have been proposed by Anderson et.al (2001) and Churches (2010) with the aim of enhancing alignment with contemporary requirements and addressing the constraints of the taxonomy. In a study conducted by Anderson et al. (2001), the authors critically reevaluated Bloom's taxonomy and proposed a revised framework for instructional objectives that include a verb-noun link. Similarly, Churches (2010) incorporated technology into their work to improve the accessibility of digital media. Both of these components hold considerable importance as attributes within the context of the digital classroom. The inclusion of this particular element inside the analysis category enables its use in the processing, manipulation, presentation, and analysis of data.

The management of substantial volumes of data is becoming increasingly important in various professional domains and is becoming acknowledged as a potent instrument in the contemporary marketplace (Lim, 2019 and Stancheva-Todorova, 2019). Furthermore, the study conducted by Ghasemaghaei, Ebrahimi, and Hassanain (2017) provided empirical evidence supporting the efficacy of data analytics technology in facilitating the improvement of decision-making processes within corporate communities. Consequently, there is an increasing demand for data analytics capabilities in the employment sector, yet academic programmes continue to stay stagnant. In a study conducted by Ku Hisam Che Ku Kassim (2014), it was argued that accounting graduates in Malaysia receive a restricted amount of knowledge and a notable focus on technical competencies. Put simply, public colleges have neglected to give priority to the skills and abilities that are in demand in the employment market. Consequently, accounting graduates are being equipped with inadequate knowledge and skills, which may adversely impact the calibre of their future employment. Therefore, it is imperative to implement a restructuring in the accounting education system, as specified in the Halatuju 2 blueprint: Reassessment Report on Accounting Programme at Public Universities. The main aim of this blueprint is to guarantee that public universities possess the capacity to generate accounting graduates of exceptional quality who can effectively incorporate and utilise diverse knowledge and skills to tackle the complexities of the contemporary business landscape. This objective can be accomplished through the improvement of curriculum content and pedagogy in accounting education, which have been subject to criticism. This observation aligns with the research conducted by Nelson (1995), which revealed that the existing curriculum predominantly emphasises the development of technical competencies among students, while overlooking the importance of non-technical abilities. Moreover, the teaching method utilised by accounting instructors, which predominantly depends on lectures, fails to adequately provide students with the necessary abilities required by the field (De Villiers, 2010). Consequently, accounting graduates have limited proficiency and competencies.

Price Waterhouse and Cooper (2015) propose the integration of data analytics into accounting curriculum as a means to augment the technical underpinnings of accounting students in data analytics and associated proficiencies, thereby rendering them more employable in the professional sphere. In addition, Ernst & Young (2017) has highlighted the importance of having a high level of skill in data analytics in order to make well-informed business decisions. Therefore, it is necessary to have an analytics mentality in order to stay current. This viewpoint provides a thorough comprehension of the continuous need that exceeds the availability of graduates with data analytics expertise. The Digital Technology Blueprint was introduced by the Malaysian Institute of Accountants (MIA) in 2018, from the standpoint of Malaysia. The primary objective of the Blueprint is to equip accountants with the necessary competencies and expertise required to effectively navigate the technological advancements within the context of IR4.0. The Blueprint is a set of concepts that delineate the fundamental abilities and competences necessary for individuals to attain proficiency as professional accountants. These principles encompass a comprehensive spectrum, spanning from beginner to intermediate and advanced levels.
Given the advancements in data analytics and big data, coupled with the imperative to meet the demands of professional bodies, it is imperative to conduct an assessment of the accounting curriculum to ascertain the extent to which the transferable skills imparted through the curriculum align with the specific criteria established by these bodies. Table 1 presents a thorough summary of the many subjects pertaining to data analytics and the incorporation of pertinent skills in various accounting courses, as emphasized by Dzuranin, Jones & Olvera (2018).

<table>
<thead>
<tr>
<th>Professionals bodies</th>
<th>Focus area</th>
<th>Skills identified</th>
</tr>
</thead>
</table>
| Chartered Global Management Accountant (CGMA, 2016) | Managerial Accounting | - Curiosity (the ability to adapt a probing and questioning stance)  
- Ability to work with data  
- Understand the business context  
- Ability to think in systems  
- Ability to use visualization tools and storytelling to communicate results |
| Forbes Insights/KPMG (Forbes Insights, 2015) | Auditing | - Investigating financial skills  
- Understanding of data and analytics  
- Critical thinking and judgement  
Communication skills |
- Ability to research and identify anomalies and risk factors in underlying data  
- Mine new data sources  
- Understand databases – both relational and non-relational  
- Ability to use statistics, visualization tools, optimization methods, machine learning, and predictive analytics  
- Identify and frame key business decisions  
- Extract data and run appropriate analytics to  
- Generate insights |
| IMA (ACCA & IMA 2013) | Managerial and professionals | - Can ask the right questions  
- Can use predictive and analytics tools  
- Can use statistical and analytical tools to understand the meaning of data and communication the findings  
- Can use visualization tools to communicate  
- and build dashboards |

Source of the findings were based on Study by Dzuranin, A.C., Jones, J.R. & Olvera, R.M. (2018).

In the Malaysian context, a comprehensive evaluation has been conducted on the accounting curriculum to ensure that the transferable skills are in accordance with the standards established by professional bodies. According to the Ministry of Higher Education (MOHE) of Malaysia, Table 2 displays the learning outcomes pertaining to data analytic abilities as outlined in Laporan Halatuju 3.
### Table 2: Integration of Data Analytical Skills from Malaysia Perspective

<table>
<thead>
<tr>
<th>Author(s)/professional bodies/government agencies</th>
<th>Focus area</th>
<th>Skills identified</th>
</tr>
</thead>
</table>
- Critically evaluate the role of various interest groups in formulation of accounting standards and the due process of accounting standard setting of specific accounting standards |

Management Accounting

<table>
<thead>
<tr>
<th>Focus area</th>
<th>Skills identified</th>
</tr>
</thead>
</table>
|            | - Analyze comprehensive variance analysis  
- Analyze behavioral and ethical considerations and issues in managerial strategic decision  
- Analyze the behavioral impact of performance measurement within the responsibility accounting framework  
- Discuss current issues in strategic management  
- Accounting  
- IT skills through application of spreadsheet  
- Develop communication and presentation skills  
- Apply management accounting information in pricing strategies and bidding decisions  
- Apply the concept of relevant information and techniques in managerial decision  
- Develop the short-term planning, control and decision-making skills |

Auditing

<table>
<thead>
<tr>
<th>Focus area</th>
<th>Skills identified</th>
</tr>
</thead>
</table>
|            | - Able identify the differences between financial, compliance and operational audits.  
- Distinguish the types of audit report and determine the appropriate audit report for a given audit situation  
- Analyze the internal control problems of a company and suggest possible solutions  
- Explain the significance of client’s IT and its implications on business activities and audit process, role of CAATS in audit work, the nature of internal audit  
- Demonstrate a good understanding on the importance of technology in the internal audit work  
- Able to explain the nature and... |
Based on the data provided, it is evident that there exist divergent viewpoints among higher education institutions and professional bodies regarding the fundamental competencies necessary for an accounting programme. One of the primary factors contributing to divergent viewpoints between accounting bodies and universities is the lack of presence within the university education system (Saleem Parvaiz, Mufti & Gul, 2017). Pruske (2012) emphasizes the comparable divergent perspectives held by public accountants and non-public accountants with regards to the significance of accounting-related skills and subjects that should be incorporated into undergraduate courses. According to Ismail, Elham, and Abdul (2020), companies assert that higher education fails to sufficiently equip accounting graduates with the requisite abilities. There is a subject
of debate surrounding the prioritization of emotional intelligence (EI) skills in the graduates of university-level accounting programmes. Coady (2014) asserted that emotional intelligence (EI) abilities are essential for graduates and emphasized that additional growth is necessary. According to Wong, George, and Aman Tanima (2021), there is a tendency in accounting education to give priority to the interests of financial stakeholders, often neglecting alternative viewpoints. It is important to acknowledge that there is a divergence in perspectives between accounting education providers and practitioners regarding the importance of accounting-related skills and the subjects that should be incorporated into undergraduate curricula. Drew (2018) has highlighted the impracticality of expecting newly graduated accountants to possess advanced proficiency in data analytics skills and knowledge (Baccala & Ponagai, 2018). According to Vasarhelyi and Tschakert (2017), it is imperative for senior accounting personnel to possess the necessary skills to effectively handle queries, retrieve data, understand data analytics methodologies, and analyze and present the findings of analytics in a manner that contributes value to the organization.

The diverse understanding of data analytics has prompted an ongoing debate regarding the importance of integrating data analytics into accounting curricula. This is due to the common misconception that data analytics skills are restricted to descriptive analysis, which aims to determine the nature of something. Nevertheless, it has been noted that accounting professionals now employ descriptive and diagnostic analytics in their routine tasks, whereas the true difficulty is in the realm of predictive analysis (predicting future outcomes) and prescriptive analysis (determining appropriate courses of action).

Integrating Data Analytics Proficiency in Taxation Law Education using Excel Spreadsheets

The complex nature of taxes legislation requires the development of data analytical abilities, which shift the students’ responsibility from simply collecting data to analyzing the resulting data. The integration of data analytics skills into the curriculum using a digital platform was suggested by Tschakert, Kokina, Kozlowski, and Vasarhelyi (2016) with the objective of problem-solving, knowledge exploration, and information dissemination. Furthermore, the use of digital platforms in education can efficiently assist students in recognizing and comprehending legal regulations (Franklin et al., 2020). According to Cheng, Shaw, and Yurko (2021), it is recommended that data analytics be included in the curriculum to acquaint students with the methodologies employed in tax data analysis. Hence, a methodology based on fundamental concepts, such as the 'extract, transform, and load' (ETL) technique employed by novice accounting practitioners, can be included into the educational environment. The proposed methodology will prioritize the development of students' proficiency in data analysis and visualization, employing fundamental Excel capabilities such VLOOKUP, conditional formatting, PivotTables, and visualizations.

Laplante and Vernon (2021) proposed the integration of Excel into student assignments, specifically for the purpose of addressing straightforward tax issues that entail the identification of tax legislation and tax treatments. The cultivation of technical tax abilities necessitates the adoption of an analytical attitude while examining tax scenarios. Prior to conducting advanced analysis, such as predictive or prescriptive analysis, it is crucial to perform this technique as a fundamental component of tax data analytics. As stated by Franklin et al. (2020), this exercise provides students with an opportunity to enhance their technical tax skills within the classroom setting. Moreover, the utilization of Excel is prevalent in the context of preparing business tax returns (Best and Schafer, 2017).

The sample case had five learning objectives that aimed to expose students to corporate tax planning, which is the main analytical focus. The educational goal encompasses the computation of capital allowances, adjusted income, statutory income, aggregate income, and chargeable income prior to tax incentives. Next, it is necessary to compute the investment tax advantages, such as pioneer status vs investment tax allowance. This should be followed by recalculating adjusted income, statutory income, aggregate income, and chargeable income. Additionally, it is important to determine the tax due and generate tax work papers using Excel. The ultimate objective is to generate visual representations in Excel by condensing tax data and assess tax benefits through the examination and comparison of tax information, in order to compose a written explanation of the study in a professional context.
During the second week of the semester, the tax scenario was assigned, and a subsequent deliberation occurred subsequent to the examination of corporate taxation and investment incentives. The students were allocated a time frame of around two weeks to undertake the tax analysis as a component of a collaborative task. Prior to disseminating the assignment, a preliminary poll was undertaken, wherein a significant proportion of students indicated possessing fundamental proficiency in Excel. Furthermore, a cumulative duration of 45 minutes was designated for the purpose of deliberating on the objectives, resolving inquiries, and delivering a concise summary prior to submission. Following the submission, a concise survey was disseminated to collect input from students who utilized the case, hence facilitating the assessment and modification of the educational goals, as well as generating further inquiries for subsequent student surveys. Table 3 displays the outcomes of the student evaluations conducted in the case study. The students were instructed to indicate their degree of agreement with each statement using a scale that ranged from 1 (indicating strong disagreement) to 5 (indicating strong agreement).

Table 3: Student Feedbacks to use Excel in Learning Taxation Law

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The overall of the tax case assignment was relevance</td>
<td>4.60</td>
</tr>
<tr>
<td>2. The information presented in tax case assignments was well organized.</td>
<td>4.65</td>
</tr>
<tr>
<td>3. The case assignment effectively demonstrated the practical complexities of tax planning carried out by tax professionals.</td>
<td>4.50</td>
</tr>
<tr>
<td>4. The case assignment effectively demonstrated the practical complexities of tax planning carried out by tax professionals.</td>
<td>4.45</td>
</tr>
<tr>
<td>5. The approach of using case assignment should be continued in future tax courses.</td>
<td>4.55</td>
</tr>
<tr>
<td>6. I would recommend additional focus on using Excel for data analytics in other courses.</td>
<td>4.35</td>
</tr>
<tr>
<td>7. The tax case afforded me invaluable perspectives on integrating data analytics into a tax-focused context</td>
<td>4.40</td>
</tr>
</tbody>
</table>

The analysis of the average values revealed that the students' feedback showed that the utilization of tax cases was both pertinent and pragmatic while employing Excel. Upon finishing the tax case analysis, the students unanimously agreed that they had gained a more comprehensive comprehension of data analytics within a tax framework. They moreover concurred that the examination of tax situations utilizing Excel should be sustained in forthcoming tax categories. The acquisition of this information and expertise is deemed relevant for their prospective pursuits in the field of taxation. Numerous studies have consistently demonstrated that the integration of data analytics skills into the study of taxation law may be effectively achieved through the utilization of Excel spreadsheets. This assertion is supported by the works of Laptante and Vernon (2021), Alarie, Niblett, and Yoon (2021), Cheng (2021), and Sledgianowski, Petra, Palaez, and Zhu (2021). The students utilised Microsoft Excel to successfully accomplish the tax workpapers, compute tax rates and income, conduct data analysis and visualization, and gain access to pertinent databases. Currently, students have the opportunity to acquire knowledge about descriptive data for tax analysis and cultivate expertise in data analytics and data visualization within the field of accounting (Cheng, 2021). Excel spreadsheets are a valuable tool for students to effectively clean, prepare, and merge data in order to facilitate data visualization. By utilizing the tools, students can enhance their proficiency in technical tax and data analysis, while also acquiring practical knowledge in handling professional tax documents. Moreover, data analytics can assist students in successfully managing tax law and enhancing their understanding of tax policy.

Subsequently, the students were asked an open-ended question regarding the most attractive part of Excel and the proficiencies they acquired. Most of the students acknowledged that the utilization of charts and trends as tools for data visualization facilitated a more efficient interpretation of the obtained results. Furthermore, a variety of favorable reactions were received, including the ones listed below:

The application of Microsoft Excel proved to be engaging and advantageous in the process of tax calculation.

My comprehension of Statistics was improved through the use of Excel, which amplified my understanding of how to effectively utilize cost-free and straightforward data analytics tools for data presentation.

The application of Microsoft Excel enabled me to efficiently analyse large amounts of data and effectively communicate the findings obtained from my investigation.

Utilizing Excel to complete the tax case improved my proficiency in composing and illustrating data.
CONCLUSION AND FUTURE RESEARCH

The study aims to examine the integration of data analytics skills into taxation law through the utilization of Excel spreadsheets. It is crucial to begin by acquiring knowledge from academic literature and publications from professional bodies in order to cultivate a thorough comprehension of analytics skills. Through a comprehensive examination of these records, it has been noted that data analytics is extensively employed to embrace a wider array of digital proficiencies that are imperative for job prerequisites. The essential competencies required for data analytics involve the methodical and comprehensive utilization of data to analyze and forecast the most advantageous course of action by employing statistical techniques. Moreover, academic research has shown data to substantiate the claim that these talents are essential for becoming employable. Gaining proficiency in data analytics, including the capacity to articulate, assess, forecast, and recommend, is imperative for the development of both technical and non-technical proficiencies. Therefore, it is imperative to possess a comprehensive comprehension of the fundamental principles in mathematics and computer science as an initial foundation. The demand for strong technical skills has been on the rise as a result of technological breakthroughs. However, it is crucial to supplement these talents with non-technical soft skills, including effective communication, problem-solving abilities, critical thinking, teamwork, and project management. The provision of a data analytics course has the potential to facilitate the cultivation of these proficiencies inside the educational environment. The research results provide insight into the present condition of accounting education and its congruence with industry requirements, specifically in terms of providing students with the essential competencies in data analytics for proficient implementation of taxation legislation.

By examining the students' perceived competences necessary for developing data analysis skills, useful insights can be obtained regarding their perceived ability to effectively use data analytics approaches in navigating the complexities and nuances of taxation law. In addition, the field of taxation law largely focuses on sophisticated and complex forms of legal interpretation. Therefore, it is imperative that the technique of legal interpretation and application be a fundamental component of a taxation law course. The focus is on the management of technical data, specifically how students can understand the fundamental structure of taxation law and acquire the necessary skills for data analysis. An effective method involves examining tax possibilities by utilizing spreadsheet software like Excel and Tableau. This is consistent with the efforts made by professional bodies to integrate specialized data analysis skills into tax education programmes. Additional research requires the participation of experts to improve the existing instructional approaches in taxation law. An investigation of the enduring impacts of this methodology on students' ability to apply theoretical knowledge to practical scenarios would also yield benefits and adequately evaluate the pertinence and suitability of the suggested abilities for assessing students' proficiencies. The present analysis will provide a valuable contribution to the current corpus of knowledge regarding data analytics in the field of accounting education. Additionally, it will establish a basis for future research endeavours and enhancements in the design and implementation of the curriculum. The primary objective of this study is to establish a connection between academia and the accounting profession. This will be achieved by examining the perspectives of accounting students regarding their proficiency in data analytics specifically in the field of taxation law. By doing so, the study aims to improve the preparedness and agility of aspiring accountants in effectively responding to the changing requirements of the industry.

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