

A Comparative Analysis of Technical Accounting Skills Among Southern Region Polytechnic Students by Institution and Gender

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Abstract

Technical accounting abilities are essential for producing capable graduates who are equipped to deal with challenges in the workplace. However, there has not been much focus on the problems of students' skill mastery not matching market expectations, or the impact of institutional background and gender on the effectiveness of technical learning. To compare skill levels by gender and ascertain differences in skill levels among three TVET institutions—Politeknik Melaka (PMK), Politeknik Merlimau (PMM), and Politeknik Port Dickson (PPD), this study intends to identify the degree of technical accounting skill mastery among accounting students in three core areas: financial accounting, auditing, and taxation. Four major theories serve as the study's foundation: the theories of human capital, skill acquisition, gender schema, and institutional. Out of 251 pupils, 168 students in their fifth and sixth semesters took part in the study. A questionnaire modified from earlier research was used as the main tool in this quantitative study. Descriptive and inferential statistics (Kruskal-Wallis H and Mann-Whitney U tests) were used to analyze the data using SPSS software. The findings revealed that students' technical accounting skills were at a high level, specifically in financial accounting (mean = 4.8, SD = 0.43), taxation (mean = 4.69, SD = 0.59), and auditing (mean = 4.62, SD = 0.64). No significant differences were found between male and female students in all three areas, with p-values > 0.05: financial accounting (p = 0.73), auditing (p = 0.42), and taxation (p = 0.11). However, significant differences were observed among institutions with p-values < 0.05: financial accounting (p < 0.001), auditing (p = 0.021), and taxation (p = 0.004). The study concludes that institutional factors have a greater influence on students' technical accounting proficiency than individual factors like gender. This highlights the need for curriculum changes and more adaptable teaching and learning methods that are suited to institutional settings.

1. Introduction

Technical accounting skills are essential for accounting professionals to perform their responsibilities effectively. These skills, particularly in financial accounting, auditing, and taxation, remain foundational despite

rapid advancements in accounting technology (Hussin et al., 2023; Soltani, 2022). Although accounting software improves efficiency, using it effectively requires a strong understanding of basic accounting principles (Anderson, 2015; Sripan & Wisaeng, 2022). In addition to technological shifts, factors such as gender and institutional background have been linked to differences in technical skill acquisition. Gender influences learning experiences and professional trajectories, with studies showing variations in academic and technical performance between male and female students (Ali et al., 2016; Alanzi, 2018). Likewise, differences in institutional quality, curriculum design, and access to practical training also contribute to disparities in technical competence (Jackling & De Lange, 2009; Kwarteng & Mensah, 2022; Ismail et al., 2020).

1.1 Study Background

The accounting field plays a crucial role in national development and corporate governance, contributing to financial transparency and market confidence (Hasim, 2016; Sudjana, 2017). The demand for highly skilled accounting professionals continues to rise, particularly in core areas such as Financial Accounting, Auditing, and Taxation, as reflected in reports by ILMIA (2024) and DOSM (2023), which highlight over 18,000 job vacancies in this sector.

However, skills mismatch persists between industry expectations and graduates' technical competencies, particularly in applying practical knowledge (Afni et al., 2024; Rebele & St. Pierre, 2019). Studies have found that many students lack sufficient practical skills in preparing financial statements, conducting audits, and handling real-world tax issues (Bakulina et al., 2020; Lim et al., 2016; Susanto & Alimbudiono, 2021).

This issue is also evident in TVET institutions such as polytechnics, where students often struggle to connect theoretical concepts with real industrial practices (Siti et al., 2018). Furthermore, there is lack of comprehensive studies evaluating the level of technical accounting skills among polytechnic students based on gender and institutional differences, particularly in the Southern Zone. Thus, this study is essential in filling this knowledge gap and contributing to curriculum improvement and more targeted teaching strategies (Ahmad & Hezir, 2023; Chong, 2023; Yong, 2024).

1.2 Problem Statements

Technical accounting skills remain a core component of accounting education, especially in polytechnics that emphasize practical training and graduate employability. Despite advancements in accounting technology, foundational competencies in financial accounting, auditing, and taxation are still essential. However, prior studies highlight a gap between students' technical competencies and industry expectations, which could affect employability if left unaddressed. In Malaysia, research has primarily focused on soft and technological skills, with limited investigation into basic technical proficiency. Moreover, the impact of gender and institutional differences on technical skill acquisition among polytechnic students remain underexplored. Without data-driven insights, curriculum improvements and teaching strategies may fall short. This study addresses this gap by comparing the level of technical accounting skills among Diploma in Accounting students from Southern Zone polytechnics, based on gender and institution.

1.3 Objectives

To achieve the purpose of this study, the research objectives are as follows:

- (i) To identify the level of technical accounting skills among polytechnic students in the Southern Zone.
- (ii) To determine the differences in technical accounting skills based on students' gender.
- (iii) To determine the differences in technical accounting skills based on the polytechnics in the Southern Zone

1.4 Accounting Technical Skills

Accounting technical skills refer to the ability to effectively and accurately apply accounting principles, standards, and procedures in key domains such as financial accounting, auditing, and taxation. These competencies are foundational in technical and vocational education (TVET), especially in polytechnic institutions, where the curriculum emphasizes both theoretical knowledge and practical application.

To explain how these technical skills are acquired, this study employs the Skill Acquisition Theory (SAT) by Fitts & Posner (1967). The theory delineates three progressive stages:

- i. Cognitive Stage – Students begin by acquiring basic theoretical knowledge of accounting, such as rules of financial reporting, audit procedures, and tax classifications.

- ii. Associative Stage – Students then apply their knowledge in structured learning activities such as simulations, projects, and software practice. Errors decrease and fluency improves.
- iii. Autonomous Stage – Eventually, students can perform accounting tasks efficiently and independently, particularly during industrial training or capstone projects.

This staged development reflects how polytechnic education fosters competency-based learning, consistent with Outcome-Based Education (OBE) frameworks and the Competency Framework for Accountants (CFM). As highlighted in studies by Mazlan et al. (2024), Trencheva (2022), and Ibrahim and Nashir (2022), technical accounting skills acquired through SAT-aligned learning approaches lead to greater employability, workplace readiness, and professional competency among TVET graduates.

Financial accounting forms the backbone of professional accounting practice. It involves the ability to prepare financial statements that comply with standards such as the International Financial Reporting Standards (IFRS), Malaysian Financial Reporting Standards (MFRS), and Malaysian Private Entities Reporting Standard (MPERS). Students are expected to master double-entry bookkeeping, adjustments, and the interpretation of financial reports for decision-making purposes (Paolone, 2020; Sayyadi, 2024). In the polytechnic setting, financial accounting skills are cultivated through simulation exercises, assignments, and software-based assessments using systems such as SQL or UBS (JPPKK, 2020). Mastery of this area enhances students' job readiness and aligns with industry expectations (De Lange & Jackling, 2009; Kwarteng & Mensah, 2022).

Auditing is a systematic process to evaluate the accuracy and compliance of financial information. Technical skills in auditing include understanding International Standards on Auditing (ISA), performing risk assessment, documenting audit findings, and preparing professional audit reports. Polytechnic education delivers these skills through case-based learning, simulated audit environments, and industry-style project work (Lakew & Musa, 2019; Maireva et al., 2021). Students are also trained to evaluate internal controls, detect anomalies, and communicate findings ethically, in line with the International Ethics Standards Board for Accountants (IESBA) guidelines. Auditing competence is crucial for both public sector accountability and private sector governance (Kathure & Kambura, 2024). Taxation skills encompass knowledge of income tax legislation, the ability to perform tax assessments for individuals and businesses, and familiarity with filing procedures, such as e-Filing using actual tax forms like Borang BE and CP204 (Godspower, 2024). Students also explore tax planning, deductions, exemptions, and compliance strategies in accordance with the Income Tax Act 1967 and LHDN guidelines (Kamaruddin & Aziz, 2023). Simulations, practical worksheets, and real-case exercises help students internalize taxation concepts, while exposure to changing tax policies trains them to adapt and remain current in a dynamic fiscal environment (Marron et al., 2025; Franklin, 2015).

This study also addresses gender differences in technical skill acquisition, exploring how cognitive and socio-cultural factors may influence learning outcomes. The Gender Schema Theory by Bem (1981) explains that individuals internalize gender-based norms and roles, which in turn shape their interests, motivations, and behaviors which potentially influence engagement in technical tasks. However, current studies (Bakar, Mohamed & Abood, 2022) suggest that gender-based disparities in accounting technical skills are diminishing, particularly when students receive equal access to training, technology, and learning resources. This highlights that performance differences are not due to inherent ability but rather linked to educational opportunities and inclusive pedagogical practices. Complementing this view, the Skill Acquisition Theory emphasizes that both male and female students can achieve high levels of technical competence through properly structured learning experiences. Hence, fostering an equitable and supportive learning environment is key to closing the gender gap in technical accounting education. Educational institutions, particularly polytechnics, play a central role in shaping students' technical skills through structured curricula that integrate theoretical knowledge with hands-on practice, industry exposure, and up-to-date software training. According to Institutional Theory (Scott, 2001), institutions not only transmit knowledge but also shape the values, norms, and systems that influence how learning occurs. In the Malaysian context, polytechnic programs are guided by national frameworks such as the Competency Framework for Accountants (CFM) and international standards like IES 2 by IFAC.

Institutions that are responsive to industry demands and equipped with competent instructors and modern infrastructure are better positioned to enhance students' technical proficiency. For example, simulated audit practices, exposure to accounting software (e.g., UBS, SQL), and industry collaborations during internships all contribute positively to skill development (Mazlan et al., 2024; MIA, 2021). Simultaneously, the learning process within these institutions can be explained through Skill Acquisition Theory, which supports the design of curricula based on students' developmental stages. Teaching strategies aligned with the cognitive, associative, and autonomous stages enable students to gradually master technical tasks, mirroring real-world job requirements. In summary, the integration of skill-based pedagogy with institutional support structures is essential in producing competitive, professional, and industry-ready accounting graduates.

2. Methodology

This study's methodology outlines the systematic approach used to collect and analyze data, ensuring that the results are valid and reliable. It includes a detailed description of the research design, sampling methods, instrument development, and the statistical methods employed to answer the research questions. This study employed a quantitative research design, using both descriptive and non-parametric inferential statistics to evaluate students' technical accounting skills. This design allows for objective measurement and statistical analysis of technical accounting skills across three areas: financial accounting, auditing, and taxation, and comparisons by gender and institution. Descriptive analysis helps to describe the level of technical skills, while inferential statistics using the Mann-Whitney U test and Kruskal-Wallis H test are employed to identify differences based on gender and institutions.

A structured survey questionnaire is used as the primary data collection tool. The survey was distributed to final-year Diploma in Accounting students (semesters 5 and 6) at three polytechnics in the Southern Zone of Malaysia: Politeknik Melaka (PMK), Politeknik Merlimau (PMM), and Politeknik Port Dickson (PPD). The questionnaire includes demographic data (Section A) and questions assessing the technical skills of the students in the three main areas (Section B). The study's population consists of students from the three polytechnics, totalling 251 students from semesters 5 and 6. Using a convenience sampling method, 168 respondents were selected, representing a sample size derived through Raosoft software with a 95% confidence interval and 5% margin of error.

The survey instrument was tested for content validity by a panel of five experts in accounting, education, and quantitative research. A pilot study was conducted with 30 respondents to assess the clarity and reliability of the instrument, yielding a high Cronbach's Alpha coefficient (above 0.9), indicating excellent internal consistency. Data collected via the questionnaire was analyzed using SPSS version 27. Descriptive statistics which are mean and standard deviation were used to assess the technical skills of the students. The Mann-Whitney U and Kruskal-Wallis H tests were applied to analyze the differences in technical skills by gender and institution, respectively.

3. Results & Discussion

This section presents the findings derived from the data analysis conducted on Diploma in Accounting students at selected polytechnics in the Southern Zone of Malaysia. The analysis is structured to address the study's research objectives and questions. The results are organized into three main areas which are the overall level of students' technical accounting skills across financial accounting, auditing, and taxation, differences in technical skills based on gender, and differences in technical skills across institutions. Given that normality tests indicated the data was not normally distributed, non-parametric statistical tests were employed. The Mann-Whitney U test was used to examine differences by gender, while the Kruskal-Wallis H test was used to assess differences across institutions. The discussion draws on the statistical results presented earlier, linking them with relevant literature and theoretical frameworks such as Skill Acquisition Theory, Gender Schema Theory, and Institutional Theory. It also highlights the implications of the findings for curriculum development and teaching practices and concludes with recommendations for future research.

3.1 Level of Accounting Technical Skills of Diploma in Accounting Students

This study found that Diploma in Accounting students from three Southern Zone polytechnics demonstrated a high level of technical accounting skills in the three core domains of Financial Accounting, Auditing, and Taxation. The analysis indicates strong and consistent mastery across these areas, as shown in Table 1.

Table 1 Overall Mean Scores of Technical Accounting Skills

Technical Skill Area	Mean Score	Standard Deviation	Interpretation
Financial Accounting	4.800	0.432	High
Auditing	4.619	0.642	High
Taxation	4.693	0.587	High
Overall Average	4.704	0.557	High

The high score in Financial Accounting suggests that students are not only familiar with accounting principles but are also capable of applying them in preparing and analyzing financial reports in compliance with national (MPERS, MFRS) and international (IFRS) standards. This reflects progression beyond the cognitive stage into the associative stage of the Skill Acquisition Theory by Fitts and Posner (1967), where students begin to refine and apply their knowledge with increasing fluency and reduced errors. Similarly, in Taxation, the strong mean score indicates students' competence in performing core tasks such as income tax calculations,

identifying tax periods, and utilizing tax incentives. These capabilities imply that learners are moving toward the autonomous stage, where technical actions become more automatic and contextually relevant—an outcome achievable through practice, simulations, and case-based learning strategies.

In Auditing, although students demonstrated a high skill level, the relatively lower mean and higher standard deviation suggest variation in mastery. Students seem competent in basic auditing procedures but may struggle with higher-order tasks such as risk assessment, evaluation of internal controls, and audit judgment. These complex skills require a deeper level of experience, which places them at the upper end of the associative stage, approaching the autonomous stage but not fully achieved. This implies a need for enhanced exposure to realistic audit scenarios or workplace-based learning. The findings confirm that polytechnic programs are effectively developing students' technical skills, countering the long-standing perception that TVET students lack professional-level competencies. This aligns with the expectations set out in IFAC's International Education Standard (IES) 2, which emphasizes technical competence in financial reporting, audit, and taxation for professional accountants. Integrating Skill Acquisition Theory into the interpretation of these findings emphasizes that students' skill development occurs in a gradual and systematic manner, starting from basic understanding to the mastery of applied skills, supported by a practice-oriented pedagogical approach. The structure of the polytechnic curriculum, which emphasizes real-world applications, simulations, and contextual learning, appears to be instrumental in advancing students from novice to skilled performers within the technical domains of accounting.

3.2 Differences in Accounting Technical Skill Levels by Gender

To examine gender-based differences in students' technical accounting skills, the Mann-Whitney U test was conducted as the data did not follow a normal distribution. The analysis revealed no statistically significant differences in the level of technical skills between male and female students across the three core areas: financial accounting, auditing, and taxation in Table 2.

Table 2 Mann-Whitney U Test on Gender Differences in Technical Accounting Skills

Technical Skill	Gender	N	Mean Rank	U	Z	p-value	Interpretation
Financial Accounting	Male	56	85.95	3055.00	-0.342	0.732	No significant difference
	Female	112	83.78				
Auditing	Male	56	88.46	2914.50	-0.801	0.423	No significant difference
	Female	112	82.52				
Taxation	Male	56	91.67	2734.50	-1.602	0.109	No significant difference
	Female	112	80.92				

All p-values exceeded the significance threshold of 0.05, indicating no significant gender differences in students' mastery of technical accounting skills in any of the three domains. These findings challenge the assumptions proposed by Gender Schema Theory (Bem, 1981), which posits that individuals internalize societal gender stereotypes such as the notion that technical disciplines are more suited for males. However, the results of this study demonstrate that female students performed on par with male students in technical domains such as financial reporting, audit procedures, and tax computation. Furthermore, the results support Skill Acquisition Theory (Fitts & Posner, 1967), which explains that technical skill mastery progresses through cognitive, associative, and autonomous stages. Both male and female students appear to have undergone similar learning processes through structured practice, simulations, and contextual learning resulting in equivalent performance across genders. This is further supported by prior studies (Sulaiman et al., 2015; Alwerthan, 2025; Yang & Liang, 2017), which emphasized the role of curriculum design and institutional support over gender in determining students' technical performance. The implementation of practical-based curricula and equitable access to learning tools in polytechnics has successfully bridged the gender gap in technical accounting education.

In summary, the study confirms the acceptance of the null hypothesis (H_0)—that there are no significant differences in technical accounting skills between male and female students. This reinforces the view that inclusive educational strategies in polytechnics have enabled equitable skill acquisition, making gender a non-determinant factor in accounting competency at the TVET level.

3.3 Institutional Differences in Technical Accounting Skills

To determine whether students' technical accounting skills differed by institution, a Kruskal-Wallis H test was conducted among students from three polytechnics in the Southern Zone: Politeknik Melaka (PMK), Politeknik Merlimau (PMM), and Politeknik Port Dickson (PPD). The test was appropriate due to non-normal data distribution. The results indicate significant differences in students' technical skills across all three core areas: financial accounting, auditing, and taxation in Table 3.

Table 3 Kruskal-Wallis H Test Results on Institutional Differences in Technical Accounting Skills

Technical Skill	Institution	N	Mean Rank	H	df	p-value	Interpretation
Financial Accounting	PMK	45	65.94	14.430	2	<0.001	Significant difference
	PMM	63	93.32				
	PPD	60	89.16				
Auditing	PMK	45	72.54	7.681	2	0.021	Significant difference
	PMM	63	81.53				
	PPD	60	96.58				
Taxation	PMK	45	67.16	11.102	2	0.004	Significant difference
	PMM	63	89.63				
	PPD	60	92.13				

Students from PMM and PPD consistently outperformed those from PMK in all three skill domains. These findings suggest that institutional context significantly influences technical skill development, despite standardized curricula across the polytechnic system. From the perspective of Institutional Theory (DiMaggio & Powell, 1983), the differences can be attributed to institutional isomorphism that is not perfectly uniform across polytechnics. Variations in organizational structure, teaching quality, industry collaboration, and institutional culture contribute to different learning outcomes. For instance, institutions with more robust industry ties and access to professional simulations or practical-based modules may create superior learning environments that enhance skill acquisition.

In alignment with Skill Acquisition Theory (Fitts & Posner, 1967), students in polytechnics offering stronger experiential learning opportunities may advance more efficiently through the cognitive, associative, and autonomous phases of skill mastery. Those exposed to high-quality practical engagement, such as internships or hands-on projects, are more likely to attain advanced technical proficiency.

These findings are consistent with Sidorova et al. (2023), who emphasized the role of institutional implementation, particularly lecturer expertise and access to technical resources in shaping students' competencies. Bastor (2024) similarly highlighted that outcome-based institutional cultures and continuous student performance monitoring lead to better technical readiness.

In conclusion, the results reject the null hypothesis (H_0): there are significant institutional differences in students' technical accounting skills. This underscores the need for policy attention not only to curriculum design but also to institutional delivery mechanisms, industry engagement, and context-specific adaptation strategies. Integrating Institutional Theory and Skill Acquisition Theory, this study contributes a nuanced understanding of how institutional factors shape technical competence in accounting education.

4. Conclusion

This study investigated the level of technical accounting skills among Diploma in Accounting students at three polytechnics in the Southern Zone of Malaysia, focusing on three core domains: financial accounting, auditing, and taxation. The results revealed that students generally possessed a high level of technical skills **across** all three domains, indicating the effectiveness of polytechnic-based technical and vocational education in equipping students with industry-relevant competencies. No significant differences were found between male and female students, suggesting that gender does not influence technical skill acquisition, thereby challenging gender-based stereotypes in technical disciplines. This finding supports the notion of an inclusive and equitable learning environment, consistent with the Skill Acquisition Theory, where both male and female students progress through cognitive, associative, and autonomous phases of learning at similar rates when given equal opportunities.

However, the study found significant differences in technical skill levels between institutions, with students from PMM and PPD outperforming those from PMK. This indicates that institutional factors such as teaching

strategies, industry exposure, facilities, and lecturer expertise play a crucial role in shaping technical competencies. Such variations align with the Institutional Theory, emphasizing that organizational environment and institutional adaptation impact learning outcomes despite standardized curricula. Overall, this study contributes to the growing body of literature on accounting education by highlighting the strengths of Malaysia's polytechnic system in developing technical skills, while also identifying areas for improvement. The findings underscore the importance of equitable teaching approaches, institutional benchmarking, **and** strengthened industry-academia collaboration to ensure that graduates are equipped with the practical skills necessary for the evolving demands of the accounting profession.

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Conflict of Interest

Authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

This journal requires that all authors take public responsibility for the content of the work submitted for review. The contributions of all authors must be described in the following manner:

*The authors confirm contribution to the paper as follows: **study conception and design:** Umi Nur Zaheedah Mat Khanin, Nur Syamimi binti Mohd Razali; **data collection:** Umi Nur Zaheedah Mat Khanin; , Nur Syamimi binti Mohd Razali **analysis and interpretation of results:** Umi Nur Zaheedah Mat Khanin, , Nur Syamimi binti Mohd Razali; **draft manuscript preparation:** Umi Nur Zaheedah Mat Khanin, , Nur Syamimi binti Mohd Razali All authors reviewed the results and approved the final version of the manuscript.*

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