International Research Journal of Advanced Education and Sciences
JAYE PUBLICATIONS https://irjaes.org/

Gender and Academic Semester Differences in Perceived Employability among STEM Students

Ying-Leh Ling[1]*, See-Ling Chong[2], Nik Syahrul Faizal Nik Mat[3]
[1, 3]Politeknik Kuching Sarawak, 93200 Kuching, Sarawak, Malaysia
[2]Wawasan Open University, 10050 Penang, Malaysia
*Corresponding Author's Email address: drlingyingleh@gmail.com

Abstract *— Amid the increasing emphasis on employability in STEM education, this study investigates how STEM students at a Technical and Vocational Education and Training (TVET) college in Kuching, Sarawak, perceive their preparedness for the workforce. Focusing on self-directed learning, communication, teamwork, leadership, digital literacy, and confidence in achieving academic goals, data were collected from 177 students across different academic semesters using a structured and pilot-tested questionnaire. The results indicate that while students exhibit strong digital literacy and the ability to apply theoretical knowledge, they encounter challenges in self-regulated learning and reflective practices. No significant gender differences were found in employability perceptions; however, academic progression was positively associated with increased confidence in employability skills. These findings underscore the developmental nature of employability competencies, suggesting that as students advance in their studies, they gain greater assurance in their career readiness. The study highlights the importance of embedding self-regulation, reflective learning, and career planning within STEM curricula from the early stages of education, advocating a balanced approach between technical proficiency and soft skill development to enhance graduates' employability and adaptability in evolving professional contexts.*

Keywords *— Perceived employability; STEM education; TVET students; Gender differences; Academic progression.*

I. Introduction

Enhancing the employability of STEM graduates in Malaysia has become increasingly vital in response to the evolving demands of the labour market. Although STEM education has been a national priority, limited comprehensive research has examined perceptions of employability among students of different genders and academic levels. Understanding these perceptions is crucial for designing targeted educational strategies that address diverse student needs and better align graduate outcomes with industry expectations.

Recent studies have underscored the urgency of embedding employability within STEM curricula. The Malaysian Ministry of Higher Education (2022) reported a widening gap between graduation and employment, highlighting that many STEM graduates lack the soft skills and practical experience demanded by employers. Despite strong academic performance, female STEM graduates are less likely to remain in related professional fields post-graduation. Employability encompasses not only technical proficiency but also soft skills such as communication, teamwork, leadership, and adaptability—competencies essential for a successful transition from academia to the professional environment. Lowden, Hall, Elliott, and Lewin (2011) further emphasised that employers prioritise graduates with strong interpersonal and problem-solving abilities. Similarly, the World Economic Forum's Future of Jobs Report (2023) highlights the rising importance of critical thinking, creativity, and effective communication across all sectors, including STEM. The 2022 Graduate Employability Report by the Malaysian Ministry of Higher Education likewise confirmed that deficiencies in soft skills remain a significant barrier to employment among STEM graduates.

Nevertheless, persistent inconsistencies continue to hinder employability outcomes. Misalignment between educational training and industry needs, differing perceptions of employability skills, and unequal institutional support contribute to graduates' challenges in securing employment. Azami, Ibrahim, Masrom, Yusoff, and Yaacob (2023) found that many STEM graduates remain unemployed because their education does not fully align with current industry requirements. The Graduate Tracer Study (MOHE, 2023) also revealed that while overall employability rates have improved, substantial disparities persist across disciplines, with STEM graduates—especially in specialised or emerging fields—experiencing higher unemployment rates. Complementing these findings, the 2022 Malaysia Workforce Survey by JobStreet identified the lack of critical soft skills, particularly communication and teamwork, as key obstacles to employability.

Looking ahead, these challenges are expected to intensify amid technological disruption, economic uncertainty, and shifting labour market dynamics. The World Economic Forum (2023) projects an escalating demand for advanced digital skills and interdisciplinary knowledge, while the International Labour Organization (2023) warns that global crises and geopolitical instability may further exacerbate employment volatility. In Malaysia, the Ministry of Human Resources (2023) anticipates substantial growth in renewable energy, digital technology, and healthcare sectors—fields requiring specialised, future-oriented skill sets. However, questions remain as to whether current STEM curricula adequately prepare graduates for these evolving demands. Consequently, examining how STEM students perceive their employability across genders and academic semesters offers valuable insights into the effectiveness of current educational practices and highlights areas for curriculum enhancement to better equip

Ying-Leh Ling, See-Ling Chong, and Nik Syahrul Faizal Nik Mat, "Gender and Academic Semester Differences in Perceived Employability among STEM Students," *International Research Journal of Advanced Education and Sciences*, Volume 1, Issue 1, pp. 1-5, August 2026.

future graduates for the workforce. This study contributes to the growing body of literature on employability by providing empirical evidence to inform policy and curriculum development in Malaysian TVET institutions.

II. Literature Review

A. Employability among STEM students

Employability, broadly defined as an individual's capability to gain, sustain, and progress in employment, is increasingly viewed as a multidimensional construct encompassing knowledge, skills, attributes, and adaptability (Yorke, 2006). Within the science, technology, engineering, and mathematics (STEM) domains, employability has drawn significant attention due to the accelerating pace of technological advancement and the global demand for innovation-driven human capital. The World Economic Forum (2020) highlights that STEM-related occupations—particularly in information technology, biotechnology, engineering, and data science—are expanding at rates exceeding most other sectors. However, the notion of employability in STEM extends beyond technical mastery; it involves cultivating soft skills, digital literacy, and the ability to navigate evolving labour market dynamics.

Empirical evidence supports the value of experiential learning in strengthening employability perceptions. Jackson (2019) found that STEM students who participated in internships or cooperative education programmes reported greater confidence in their career prospects and demonstrated a clearer understanding of workplace expectations. Similarly, Tran (2021) noted that internship participants were 20% more likely to obtain employment within six months of graduation compared to non-participants. These findings suggest that work-integrated learning not only enhances employability perceptions but also bridges the academia–industry divide—a recurring concern in STEM education (McKinsey Global Institute, 2017). Yet, many academic programs continue to prioritise technical content over employability skills, resulting in graduates who are technically competent but lack adaptability and communication capabilities valued by employers.

The growing prominence of Industry 4.0 further reinforces the need for digital proficiency as a core employability component. Bennett (2020) reported that 78% of employers expect graduates to demonstrate advanced competence in digital tools relevant to their sectors. This underscores a curriculum imperative: STEM education must continuously evolve to integrate emerging technologies and digital competencies. Institutional factors also play a significant role. Rothwell, Herbert, and Rothwell (2019) found that students from universities with established industry collaborations perceive themselves as more employable, highlighting the importance of institutional networks and reputation in shaping career confidence. In Malaysia, Technical and Vocational Education and Training (TVET) institutions have been positioned as key intermediaries in this process, offering hands-on learning and industry-aligned curricula to strengthen graduate employability (Ministry of Education Malaysia, 2020).

The development of employability is also tied to psychological constructs such as self-efficacy. Bandura's (1997) theory posits that individuals' beliefs in their capabilities influence their motivation and performance, and this notion has been extended to explain employability confidence among graduates. Lent (2013) similarly emphasised career self-management and proactivity as essential employability attributes that influence both personal and organisational outcomes. Empirical studies (Tomlinson, 2008; Jackson, 2016) indicate that institutions that provide structured career services, mentoring, and project-based learning opportunities foster higher self-efficacy and more realistic employability perceptions among students. Conversely, Holmes (2013) warns that an inflated sense of employability without sufficient understanding of market realities can lead to frustration and career disillusionment. Thus, employability should be cultivated not merely as a skillset but as a reflective, adaptive process shaped by both institutional and individual factors.

B. Gender Differences in Employability Perceptions

Despite policy efforts promoting gender equity in STEM, disparities in employability perceptions between male and female students persist globally. Women remain underrepresented in STEM professions, comprising less than 30% of the global research workforce (UNESCO, 2017). Cultural stereotypes and structural barriers continue to undermine female students' confidence and sense of belonging in technical fields. Studies by Blickenstaff (2005) and Cheryan, Ziegler, Montoya, and Jiang (2017) reveal that implicit biases portraying STEM as masculine domains negatively affect women's self-assessed employability and career aspirations. Such stereotypes are often reinforced through subtle interactions with educators, peers, and family, perpetuating systemic exclusion.

The scarcity of female mentors and role models compounds this challenge. Dasgupta and Stout (2014) demonstrated that exposure to successful women in STEM positively influences female students' career persistence and employability confidence. However, Fouad and Singh (2011) argue that structural interventions—such as gender-responsive curricula, inclusive teaching, and targeted career support—are essential to address the deep-rooted inequities that shape employability perceptions. Institutions that implement inclusive pedagogies and promote gender equity tend to report improved outcomes for female graduates (UNESCO, 2017). Nevertheless, achieving parity requires more than programmatic initiatives; it demands a transformation of institutional culture to value diversity and inclusivity as integral components of employability development. As Zeldin and Pajares (2000) highlight, without deliberate structural and cultural reform, female students will continue to underestimate their professional competencies despite possessing equivalent capabilities to their male counterparts.

C. Academic Progressions and Employability

Perceptions of employability are also dynamic across academic progression. Early-stage STEM students often equate employability with academic achievement and technical

Ying-Leh Ling, See-Ling Chong, and Nik Syahrul Faizal Nik Mat, "Gender and Academic Semester Differences in Perceived Employability among STEM Students," *International Research Journal of Advanced Education and Sciences*, Volume 1, Issue 1, pp. 1-5, August 2026.

proficiency (Tomlinson, 2008). As they advance through their studies, exposure to specialised courses, internships, and industry projects enhances their understanding of workplace expectations and shifts employability perceptions toward a broader, more holistic perspective (Rothwell, Herbert, & Rothwell, 2008). By the final year, students generally exhibit higher self-efficacy and confidence in transitioning to employment, reflecting cumulative academic and experiential learning (Jackson, 2016; Holmes, 2013).

Nevertheless, progression alone does not guarantee employability readiness. Without sufficient practical engagement, even senior students may lack the contextual awareness and adaptability required by the modern labour market. Holmes (2013) argues that employability should be conceptualised as a developmental trajectory rather than a fixed outcome, with learning experiences structured to progressively build technical, interpersonal, and reflective capacities. The integration of experiential learning throughout the academic journey—rather than confining it to terminal internships—may therefore produce graduates with more realistic and resilient employability perceptions.

In summary, employability among STEM students emerges from a complex interplay of individual, institutional, and sociocultural factors. Self-efficacy, gender inclusivity, and experiential learning are interdependent drivers that shape how students perceive and enact employability. A critical implication for higher education is the need to embed employability development within pedagogical design—linking academic content, professional practice, and inclusive engagement—to prepare STEM graduates for an increasingly dynamic and competitive global labour market.

III. Research Methodology

A. Research Design

This study employed a quantitative, cross-sectional survey design to examine perceived employability among STEM students across gender and academic semesters at a Technical and Vocational Education and Training (TVET) institution in Kuching, Sarawak. The approach was chosen to objectively measure and compare students' perceptions while ensuring generalizability to the wider population. A descriptive research design was applied to identify patterns and relationships among variables without manipulating any conditions (Creswell & Creswell, 2017).

B. Research Instrument

An online questionnaire adapted from Bennett, Bawa, Ananthram, and Pitman (2022) served as the primary research instrument. Distributed via Google Forms, it offered efficiency, accessibility, and wide coverage. The instrument consisted of 66 items across several dimensions of employability, including self-study awareness, communication, teamwork and leadership, digital literacy, confidence in achieving study goals, help-seeking behaviour, self-regulated learning, learning mindset, and application of theory in practice. Each construct was measured using a six-point Likert scale designed to capture nuanced variations in students' perceptions. The instrument's validity and reliability were supported by prior empirical studies, and its internal consistency was confirmed through a pilot study involving 31 participants, yielding a Cronbach's alpha of .985, indicating excellent reliability (Tavakol & Dennick, 2011).

C. Population and Sampling

The study population comprised of STEM students from six academic departments—Civil, Mechanical, Electrical, Petrochemical Engineering, Commerce, and Information Technology and Communication—enrolled in different semesters. Stratified random sampling was used to ensure proportional representation across gender and academic levels, thereby enhancing the precision and generalizability of findings (Bryman, 2016). The survey was completed by a total of 177 participants.

D. Data Analysis

The SPSS program, version 26, was utilized for the quantitative data analysis. Descriptive statistics (mean, standard deviation, and percentage) were used to summarize the general perceptions of employability. Independent samples *t*-tests examined gender differences, while one-way ANOVA tested variations across academic semesters. These analyses identified statistically significant differences and emerging trends in employability perceptions (Field, 2018; Pallant, 2020).

Overall, this methodological approach ensured a rigorous, systematic, and replicable examination of employability perceptions among STEM students, providing empirical evidence to inform policy, curriculum development, and targeted interventions to strengthen STEM graduate employability in Malaysia.

IV. Research Findings and Discussion

A. Independent Sample t-Test: Gender Differences in Employability Perceptions

An independent-sample t-test was conducted to examine gender differences in employability perceptions across multiple dimensions. Results revealed a significant difference in self-study awareness between male (M = 3.78, SD = 0.998) and female students (M = 3.42, SD = .743); t(175) = 2.72, p = .007. This finding suggests that male students exhibited a higher perception of employability related to self-study awareness compared to their female counterparts.

In contrast, there were no statistically significant gender differences in communication skills (male: M = 4.60, SD = .820; female: M = 4.76, SD = .707; $t(175) = .171$, $p = .189$), teamwork and leadership (male: M = 4.60, SD = .745; female: M = 4.69, SD = .689; $t(175) = .415$, $p = .421$), or digital literacy (male: M = 4.73, SD = .772; female: M = 4.70, SD = .742; $t(175) = .688$, $p = .833$).

Similarly, no significant differences were found between male and female students in confidence related to marketability ($t(175) = .339$, $p = .591$), help-seeking behaviour ($t(175) = .377$, $p = .344$), self-regulated learning ($t(175) = .053$, $p = .440$), learning mindset ($t(175) = .939$, $p = .276$), or the application of theory to practice ($t(175) = .333$, $p = .269$). These findings collectively suggest that gender did not significantly influence most employability-related perceptions, except for self-study

Ying-Leh Ling, See-Ling Chong, and Nik Syahrul Faizal Nik Mat, "Gender and Academic Semester Differences in Perceived Employability among STEM Students," *International Research Journal of Advanced Education and Sciences*, Volume 1, Issue 1, pp. 1-5, August 2026.

awareness, where males demonstrated higher self-perceived employability readiness.

The findings indicate that male students demonstrated greater confidence in self-assessment and career planning compared to female students, consistent with prior research highlighting the influence of gender stereotypes on self-efficacy in STEM education. Despite the fact that women frequently perform academically on par with men, societal prejudices and a lack of female representation continue to erode women's self-confidence (Blickenstaff, 2005; Fouad and Singh, 2011). These disparities suggest that while female students possess equivalent technical and communication competencies, they may experience lower self-perceived employability due to internalized doubt and limited access to mentorship or role models. Such barriers contribute to reduced self-efficacy and hinder career preparation among women in STEM, reinforcing persistent gender gaps in employability perceptions.

Despite the noted differences in self-study awareness, no significant gender disparities were found in communication, teamwork, digital literacy, or help-seeking behaviour. This suggests that both male and female students develop comparable employability skills during their academic journey. However, the observed confidence gap underscores the need for institutional interventions that address gender-specific challenges. Mentorship programs, peer networks, and leadership workshops tailored for women can play a pivotal role in enhancing confidence, self-awareness, and career readiness (Dasgupta & Stout, 2014; Cheryan et al., 2017; Tomlinson, 2017). Ultimately, while the competence of female students is on par with their male counterparts, targeted initiatives promoting self-efficacy and inclusivity are essential to empower women and ensure equitable participation in the STEM workforce.

B. One-Way ANOVA: Differences in Employability Perceptions Across Academic Semesters

A one-way between-subjects ANOVA was conducted to investigate how employability perceptions varied across students in different academic semesters. A significant effect was observed in self-study awareness across the five semesters [$F(4, 172) = 7.237$, $p < .001$]. Post hoc comparisons using Tukey's HSD indicated that students in Semester 5 reported significantly higher self-study awareness than those in Semester 1 ($p < .001$). This suggests that as students' progress through their academic journey, their self-directed learning and perceived employability improve, possibly due to increased academic maturity and exposure to independent learning experiences.

No significant differences were found in communication skills [$F(4, 172) = .985$, $p = .417$], teamwork and leadership [$F(4, 172) = 2.068$, $p = .087$], or digital literacy [$F(4, 172) = 1.231$, $p = .299$] across semesters. These results indicate that students' perceptions of employability in these dimensions remain relatively consistent throughout their studies.

However, a significant difference was identified in confidence in achieving study goals across semesters [$F(4, 172) = 4.510$, $p = .002$]. Post hoc analysis revealed that Semester 5 students reported significantly higher confidence compared to those in Semester 1 ($p = .008$) and Semester 3 ($p = .024$). This increase likely reflects greater self-efficacy and goal clarity as students approach the completion of their programs.

In contrast, no significant differences were found across semesters in help-seeking behaviour [$F(4, 172) = 0.785$, $p = .536$], self-regulated learning [$F(4, 172) = 1.931$, $p = .107$], learning mindset [$F(4, 172) = 1.577$, $p = .183$], or application of theory to practice [$F(4, 172) = 1.410$, $p = .233$]. These findings suggest that while students' employability perceptions improve in certain areas, such as self-study awareness and confidence, other dimensions of employability remain stable across academic progression.

Overall, the analysis highlights that students demonstrate marked improvement in self-directed learning and confidence as they advance through their academic journey, indicating that employability readiness tends to develop progressively rather than uniformly across all dimensions.

The results revealed that students in earlier semesters reported lower self-study awareness and weaker employability perceptions compared to those in later semesters. Early-semester students often struggled to identify their strengths, weaknesses, and skill development pathways, reflecting limited awareness of how their academic learning connects to future employment (Tomlinson, 2008). As students advance, their self-awareness and confidence increase significantly due to accumulated academic experience, self-reflection, and exposure to authentic learning opportunities such as internships and industry projects. This pattern supports Jackson's (2019) findings that practical, hands-on experiences enhance employability by enabling students to apply theoretical knowledge in real-world contexts. The study also found that final-semester students expressed greater confidence in achieving academic and career goals, likely due to their preparedness and engagement in professional activities, consistent with Bennett's (2020) assertion that employability perceptions strengthen with practical exposure and career planning.

Interestingly, no significant differences were observed across semesters in communication, teamwork, or digital literacy, suggesting that these transferable skills are cultivated early and remain stable throughout students' studies. This aligns with Knight and Yorke (2014), who highlighted that communication and teamwork competencies are typically embedded across the curriculum and reinforced through collaborative and technology-based learning. The most substantial improvement across semesters was seen in self-study awareness, where final-semester students exhibited higher levels of self-reflection and clarity about their career direction, supporting Rothwell et al. (2008), who linked employability to reflective learning. Collectively, these findings underscore the need to integrate employability development throughout academic programs, ensuring that even early-semester students receive structured career guidance and opportunities for self-reflection to build confidence and strengthen employability perceptions from the outset.

V. Research Implications and Conclusion

A. Research Implications

Ying-Leh Ling, See-Ling Chong, and Nik Syahrul Faizal Nik Mat, "Gender and Academic Semester Differences in Perceived Employability among STEM Students," *International Research Journal of Advanced Education and Sciences*, Volume 1, Issue 1, pp. 1-5, August 2026.

The findings of this study hold meaningful implications for both the Ministry of Education and STEM students. For the Ministry, the results highlight the need to strengthen employability-focused education by embedding career development, self-reflection, and digital literacy into STEM curricula. Early integration of career guidance and self-assessment modules can help students develop greater self-awareness and prepare for the demands of the job market. Expanding work-integrated learning (WIL) opportunities, such as internships and industry collaborations, will bridge the gap between theory and practice, while targeted gender-support programs can promote confidence and inclusivity among female STEM students. The Ministry should also ensure curricula remain aligned with Industry 4.0 needs, emphasizing emerging technologies like AI and data analytics to maintain graduates' competitiveness in a rapidly evolving workforce.

For STEM students, the study underscores the importance of developing both technical and transferable skills through proactive engagement in reflective practices, internships, and networking activities. Students should take charge of their employability by regularly assessing their strengths, seeking real-world experiences, and staying current with technological advancements. Future research should adopt longitudinal approaches to track changes in employability perceptions over time, examine gender-specific interventions to support female students, and explore how digital transformation continues to reshape STEM education. Additionally, cross-cultural studies could provide global insights into how different educational systems foster employability, offering valuable lessons for policy and practice across diverse contexts.

B. Conclusion

In conclusion, this study highlights key insights into STEM students' employability perceptions, revealing strong skills in communication, teamwork, and digital literacy, alongside gaps in self-study awareness and career planning. Female students, in particular, reported lower confidence in career readiness, indicating persistent gender disparities. The findings emphasize the importance of work-integrated learning, mentorship, and ongoing digital skills development to enhance employability in the context of Industry 4.0. Future research should adopt longitudinal and cross-cultural approaches and investigate gender-specific interventions to provide a deeper understanding of how to support STEM students in achieving successful career outcomes.

REFERENCES

[1]. H. H. R. Azami, R. Ibrahim, S. Masrom, R. C. M. Yusoff, and S. Yaacob, "An integrated instrument for measuring science, technology, engineering, and mathematics: Digital educational game acceptance and player experience," *International Journal of Advanced Computer Science and Applications*, vol. 14, issue 8, pp. 529-539, 2023.

[2]. A. Bandura, *Self-efficacy: The exercise of control*, 1997 Psycnet.apa.org.

[3]. D. Bennett, "Digital literacy and employability in STEM education," *Journal of Employability and Skills Development*, vol. 12, issue 3, pp. 45-58, 2020.

[4]. D. Bennett, S. Bawa, S. Ananthram, and T. Pitman, Is there a gender difference in STEM students' perceived employability? *Education Training*, *ET64*, 6, 2022. https://doi.org/10.1108/et-01-2021-0029

[5]. J. C. Blickenstaff, "Women and science careers: Gender stereotypes and the career decision process," *Educational Review*, vol. 57, issue 4, pp. 371-386, 2005.

[6]. A. Bryman, Social research methods. In the *Internet Archive*. Don Mills, Ontario, Canada: Oxford University Press, 2016.

[7]. S. Cheryan, S. A. Ziegler, A. K. Montoya, and L. Jiang, "Why are some STEM fields more gender-balanced than others?," *Psychological Bulletin*, vol. 143, issue 1, pp. 1-35, 2017.

[8]. J. W. Creswell and J. D. Creswell, *Research design: Qualitative, quantitative, and mixed methods approach*. SAGE Publications, 2017.

[9]. N. Dasgupta, and J. G. Stout, "Girls and women in science, technology, engineering, and mathematics: STEM in the tide and broadening participation in STEM careers," *Policy Insights from the Behavioural and Brain Sciences*, vol. 1, issue 1, pp. 21-29, 2014.

[10]. A. Field, *Discovering Statistics Using IBM SPSS Statistics*. Sage Publications, 2018.

[11]. L. Holmes, "Competing perspectives on graduate employability: Possession, position, or process?," *Studies in Higher Education*, vol. *38*, issue 4, pp. 538-554, 2013.

[12]. D. Jackson, "Re-conceptualising graduate employability: The importance of pre-professional identity," *Higher Education Research & Development*, vol. 35, issue 5, pp. 925-939, 2016. https://doi.org/10.1080/07294360.2016.1139551

[13]. D. Jackson, "Student Perceptions of the Development of Work Readiness in Australian Undergraduate Programs," *Journal of College Student Development*, vol. 60, issue 2, pp. 219–239, 2019. https://doi.org/10.1353/csd.2019.0020

[14]. P. T. Knight and M. Yorke, "Employability and good learning in higher education," *Teaching in Higher Education*, vol. 9, issue 1, pp. 3-16, 2014. https://doi.org/10.1080/07294360.2018.1469603

[15]. R. W. Lent, "Career-life preparedness: Revisiting career planning and adjustment in the new workplace," *The Career Development Quarterly*, vol. 61, issue 1, pp. 2-14, 2013. https://doi.org/10.1002/j.2161-0045.2013.00031.x

[16]. K. Lowden, S. Hall, D. Elliot, and J. Lewin, *Employers' perceptions of the employability skills of new graduates*. London: SCRE Centre, University of Glasgow, Edge Foundation, 2011.

[17]. McKinsey Global Institute, *Jobs lost, jobs gained: Workforce transitions in a time of automation. Executive Summary. McKinsey & Company, 2017.*

[18]. Ministry of Education Malaysia, *Malaysia Education Blueprint 2013-2025 (Higher Education). MOE Malaysia,* 2020.

[19]. J. Pallant, *SPSS Survival Manual: A step-by-step guide to data analysis using IBM SPSS* (7th ed.). McGraw-Hill Education, 2020.

[20]. A. Rothwell, I. Herbert, and F. Rothwell, "Self-perceived employability: Construction and initial validation of a scale for university students," *Journal of Vocational Behavior*, vol. 73, issue 1, pp. 1–12, 2008. https://doi.org/10.1016/j.jvb.2007.12.001

[21]. M. Tavakol and R. Dennick, "Making sense of Cronbach's alpha," *International Journal of Medical Education*, vol. 2, pp. 53–55, 2011. https://doi.org/10.5116/ijme.4dfb.8dfd

[22]. M. Tomlinson, "The degree is not enough': students' perceptions of the role of higher education credentials for graduate work and employability," *British Journal of Sociology of Education*, vol. *29*, issue 1, pp. 49–61, 2008. https://doi.org/10.1080/01425690701737457

[23]. T. Tran, "The impact of digital skills on STEM employability: A global analysis," *Journal of STEM Education Research*, vol. 12, issue 2, pp. 120-139, 2021. McKinsey

[24]. UNESCO. *Cracking the code: Girls' and women's education in STEM*. Paris: UNESCO, 2017.

[25]. World Economic Forum. (2023, April 30). *The future of jobs report 2023*. World Economic Forum.

[26]. M. Yorke, *Employability in higher education: What it is and what it is not. 1*. York: Higher Education Academy, 2006.

Ying-Leh Ling, See-Ling Chong, and Nik Syahrul Faizal Nik Mat, "Gender and Academic Semester Differences in Perceived Employability among STEM Students," *International Research Journal of Advanced Education and Sciences*, Volume 1, Issue 1, pp. 1-5, August 2026.