

Integrating AI Tools for Graduate Employability: A Conceptual Framework

Azira Rahim^{1*}, Siti Rohana Daud¹, Rozana Othman¹, Najihah Abdul Rahim¹, Nani Shuhada Sehat¹,
Intan Liana Suhaime¹, Jumaelya Jogeran¹, Rafidah Abas²

¹Faculty of Business Management, University Technology MARA, Malacca Campus

²Faculty of Hotel and Tourism Management, University Technology MARA, Malacca Campus

*Corresponding Author

DOI: <https://doi.org/10.47772/IJRISS.2026.100800099>

Received: 13 August 2026; Accepted: 18 August 2026; Published: 31 August 2026

ABSTRACT

Purpose: This conceptual study aims to investigate and understand the influence of AI-assisted technologies on the employability skills of university students taking the Digital Workforce course.

In particular, the study aims to conceptualize the relationship between the use of AI-assisted tools and the improvement of key employability skills among university students, providing a conceptual framework for how AI technologies can be used for workforce readiness in the digital age.

Design/methodology/approach: The study adopts a conceptual research strategy using literature synthesis. This research is of a non-empirical nature based on systematic literature review and synthesis of existing scholarly literature. Conceptual analysis consists of critical synthesis of literature to discover patterns and linkages, analysis to categorize employability abilities influenced by AI tools, and framework building to conceptualize the AI-employability relationship.

Findings: The theoretical foundation of this conceptual study is based on the Technology Acceptance Model (TAM). This study demonstrates that the use of AI-assisted tools greatly strengthens the employability skills of university students in the Digital Workforce courses. Furthermore, the findings discuss skill development, the factors influencing the effective use of AI-assisted technologies by students, and how AI tools can facilitate various learning outcomes.

Originality of the study: This study is novel because it focuses on the conceptual linkage between AI-assisted tools and employability skills specifically within a course environment, rather than solely examining the use of AI in higher education. It also targets university students taking a Digital Workforce course, therefore making the study more specific and relevant to curriculum rather than more broad studies on AI literacy or graduate employability.

Practical implications: This study connects AI technology adoption and graduate employability, offering practical insights to all stakeholders involved in preparing university students for the digital workforce. It emphasizes the importance of ongoing learning and practical AI experience for better job prospects and job success.

Keywords: Artificial Intelligence, University Students, Employability Skills, TAM Theory, Digital Workforce

INTRODUCTION

Malaysian higher education institutions are always dealing with graduate unemployment. According to the Department of Statistics Malaysia, the number of graduates in Malaysia increased from 5.74 million in 2023 to 5.98 million in 2024, demonstrating the growing number of graduates (Thiviya, 2025). This suggests that they are in a difficult situation where they must compete with other university graduates for employment. This is supported by a prior article that reported that there were 165,900 unemployed graduates overall in 2024, a slight decline from 167,300 in 2023 (The Star, 2025). The number of graduates is increasing quickly (to 5.98 million in 2024); therefore, even a minor unemployment rate might result in tens of thousands of unemployed graduates, even though graduate unemployment has somewhat decreased. Therefore, the Malaysian government must address unemployment issues appropriately.

For several years, graduate employability has been a recurring problem, with many graduates finding it difficult to secure acceptable positions after graduation. This situation puts the nation's social and economic progress at risk in addition to threatening the leaders' future. Two effects of Malaysia's low graduate marketability include youth unemployment and a shortage of highly skilled professionals to satisfy the expectations of the future workforce (Muhammad Fadzil, 2023). Young people and fresh graduates, especially those under 24, are particularly vulnerable since many of them experience skill mismatch, underemployment, or prolonged job searching. According to a previous article, the number of graduates working below their qualifications rose by 3.9% to 1.60 million, lowering the graduate skill-related underemployment rate to 32.2% in 2024. This statistic indicates that underemployment (1.60 million) is still a significant amount and causes graduates in Malaysia to deal with issues other than unemployment (DOSM, 2024).

The unemployment of recent graduates worldwide has been linked to factors like the job market (Olukayode, 2017), what employers want (Husin et al., 2021), mismatched jobs (Hwang, 2017; Mohd Abdul Kadir et al., 2020), being overqualified, differences in individual perspectives (Hwang, 2017), and skills needed for jobs (Hwang, 2017; Mohd Abdul Kadir et al., 2020). The previous article stresses that employability skills such as communication, problem-solving, adaptability, and interpersonal skills are vital for graduates to obtain a job. It highlights the lack of these skills as a leading cause of Malaysian graduate unemployment, often inadequately developed through traditional modes of education.

The high unemployment rate among Malaysian university graduates is strongly influenced by graduates' lack of employability skills and job mismatch, which was found in a past study. Many graduates have academic qualifications but find it difficult to obtain suitable employment because they lack critical soft skills such as communication, problem solving, and leadership, and their skills are not matched to industry requirements (Mohd Salahuddin et al., 2023). Nowadays, artificial intelligence is no longer only a subject for computer scientists; it has become an essential ability in almost every field. Knowledge and use of AI is not an extra for recent and soon-to-graduate students but a prerequisite to launch and sustain a successful profession. Finance, accounting, healthcare, marketing, legal services, and tech firms are all actively recruiting entry-level candidates who can integrate AI into their operations. Being AI-literate tells recruiting employers that the graduates are adaptive, efficient, and ready to deliver value on day one working with the organization (Mukherjee, 2026). This indicates that many graduates continue to feel inadequately prepared for the labor market in an era of AI and automation.

Unemployment problems are associated with the lack of formal AI training, which stops students from getting the essential digital skills that are demanded increasingly by employers. AI-assisted learning in university courses is seen to build students' technical competence, strategic understanding, and adaptability with AI tools, factors that are linked to better job alignment and employability. Furthermore, ongoing AI training can bridge generational divides in digital competencies, reduce perceptions of unpreparedness, and equip graduates to address changing labor market requirements, thus reducing unemployment rates due to skill mismatches (Portocarrero Ramos et al., 2025). Therefore, this study focuses on employability skills, particularly the use of AI, because Malaysian higher education institutions place a strong emphasis on skill development and digital skills programs, like digital literacy, to help students become more employable and secure jobs that align with their academic knowledge.

Moreover, the global economic landscape has changed due to the quick speed of technology innovation, especially in artificial intelligence (AI). The need for a workforce with both technical and soft skills has increased dramatically as businesses embrace AI-driven solutions. The importance of AI and digital skills for the workforce of the future is also emphasized in the previous report (World Economic Forum, 2025). In particular, it emphasizes how important AI and big data are to the transformation efforts of many businesses and are predicted to be among the fastest-growing capabilities. These days, many organizations are looking for students who can use AI effectively to do jobs. Students can use a variety of AI tools, including ChatGpt, Perplexity, Gemini, Elicit, and more. Students can utilize AI to complete their coursework for free at various public universities in Malaysia. In the meanwhile, lecturers utilize AI to gather information, complete research papers, and others.

AI changes education and labour needs, underscoring the need for partnership between education and business to foster skills that equip the future workforce for AI-driven career success (Badulescu et al., 2025). AI technologies in training and education continue to grow, but little study has been completed on how these tools contribute to direct or indirect changes in employability outcomes. There is a significant gap in the research regarding how AI tools can be more effective than direct AI applications in enhancing career interventions that focus on developing greater soft skills. Most studies on AI tools have examined their technical capabilities and the impact of AI tools on cognitive learning. There is a shortage of research examining how the development of soft skills, such as communication, teamwork, and critical thinking, along with self-efficacy, influences employability outcomes (Mäkelä & Stephany, 2024). Artificial intelligence is changing education and training worldwide. However, few studies demonstrate how these technologies support people in getting jobs. This paper is dedicated to a valuable topic: the influence of AI technologies on the important soft skills that professionals need for their work, such as communication, teamwork, and critical thinking. The current studies of AI focus on the conceptual framework of the technology on the mind and insufficiently on how it may improve people's social and interpersonal abilities (Alabri & Shannaq, 2025).

Furthermore, the purpose of this study is to combine existing literature on AI tools, graduate employability, and constructs linked to TAM theory (Perceived Usefulness and Perceived Ease of Use), AI usage, and self-efficacy as mediator to find critical dimensions and gaps. Further, this research seeks to build a conceptual framework to understand the mediating effects of the integration of AI tools in higher education on graduate employability, namely self-efficacy.

LITERATURE REVIEW

TAM Theory

This study uses the Technology Acceptance Model (TAM) as a conceptual framework to investigate the reasons for user acceptance and adoption of AI tools in learning and work settings. TAM can help explain the impact of AI-assisted tools on employability in a university that investigates students' perceptions of the tools' usefulness and ease of use. This approach can increase students' intention to use AI tools, leading to more practice in the skills that the course aims to develop. A recent study on higher education indicated that perceived usefulness and perceived ease of use positively influence intention to utilize AI, and intention influences acceptance (Amir-Rudi et al., 2024). This information is crucial for employability because the impact of AI tools depends on their use, not just on student access.

Moreover, the TAM model affects AI tools for graduate employability mainly through students' willingness to accept and use these tools—perceived usefulness and ease of use—which affects their AI skill development, soft-skill development, and ultimately their job-market preparedness and employment results. One employability-oriented study found that the perceived utility and simplicity of use are associated with soft skills and employability outcomes, with soft skills mediating much of this effect. AI can also develop personalized learning environments and provide learners with the technological and soft skills employers are looking for. TAM focuses on two major factors:

Perceived Usefulness (PU): The extent to which a student believes that adopting an AI tool will improve their performance in their job or enhance their employability. When students feel that AI tools help them do work better and provide them a higher chance of finding a job, they are more driven to employ these technologies.

Perceived Ease of Use (EU): This is the degree to which a student thinks that the use of the AI product takes little effort. Simple and user-friendly tools foster more favorable attitudes toward AI tools and their behavioral intent adoption and promote engagement (Alabri & Shannaq, 2025; Coreas-Flores, 2026; Rispler et al., 2025; S & Thowseaf, 2024).

Furthermore, the Digital Workforce course has been added to the curriculum at universities, especially Universiti Teknologi MARA (UiTM). University students were introduced to the course to prepare them for the digital economy, particularly labor that takes place via online platforms and crowdsourcing. The course equips students with the skills necessary to generate revenue and develop a portfolio, as well as actual exposure to digital work environments and job platforms. Students can learn about crowdsourcing, platform-based jobs, and online career options as well as how digital work is evolving. The course aims to develop both awareness and practical knowledge so that students can participate as digital workers or job clients. Universities offer this course because graduates today require not just academic knowledge but also digital skills, flexibility, and preparedness for the workforce. By teaching students how to obtain employment, finish assignments, make money, and build a solid online portfolio, the course promotes employability.

Through a crowdsourcing platform, students must select various skills for this course, including graphic design, proofreading, voice acting, data entry and analysis, digital marketing and social media, copywriting, and other digital jobs related to accounting, business, information technology, and more. Students use AI to accomplish graphic design tasks given by clients through the crowdsourcing platforms, such as developing business logos, pamphlets, business cards, T-shirts, and others. They also use AI to acquire concepts to do tasks such as copywriting, translating, voice-over, and other tasks. AI is able to assist the students to finish the jobs faster and meet the client's requirements and accelerate the process. This approach indicates that students not only take courses relevant to their field but also acquire other skills that will help them become more employable once they graduate. This is also in keeping with the requirement that graduates be equipped with strong technological skills to improve their employability and meet employers' demands. Thus, this study focuses on the impact of AI-assisted tools on students' employability skills in a digital workforce course.

Employability skills and Artificial Intelligence (AI)

Employability skills are the blend of talents, abilities, and traits that enable people to be employable to find, secure, and do a job well, especially in the context of technological transition and digital transformation (Portocarrero Ramos et al., 2025; Tushar & Sooraksa, 2023; Wut et al., 2025). Meanwhile, AI abilities are increasingly becoming a key differentiator in employability; graduates who report more knowledge and more frequent use of AI tools are more likely to be employed nowadays in areas related to their fields and to sense increased productivity and better professional positions (Portocarrero Ramos et al., 2025). Employability skills also refer to the integrated set of digital competencies, technical skills, soft skills, and AI-specific capabilities that students develop through AI tool usage, which enhance their ability to obtain employment, perform effectively in digital work environments, and adapt to technological changes in the workforce, as explained by TAM theory through the pathway of perceived usefulness and perceived ease of use leading to actual AI usage and skill development (Alabri & Shannaq, 2025; Portocarrero Ramos et al., 2025; Yao Charles et al., 2025).

Furthermore, AI is a set of advanced systems and technologies (such as generative AI) that process information, develop insights, and automate operations, impacting work processes, skill needs, and productivity. According to recent research, a large proportion of students in higher education are already utilizing AI tools for their assignments, from writing essays and generating ideas to analyzing code and getting ready for exams (Kelly, 2024). This indicates that students now use AI extensively in university and in their lives. AI can help students in school and after graduation. AI can improve employability skills for graduates by providing them with critical technical abilities and developing crucial soft skills for the current workplace. According to the previous report, the use of AI applications in education and training can contribute to:

- **Growth in Digital and Data Literacy:** AI-powered technologies assist graduates in developing abilities in AI, big data, and cybersecurity, which are identified as fast-growing and sought-after skills in many sectors. This increases their technology knowledge, making them more attractive to companies.
- **Problem Solving and Critical Thinking:** Working with AI systems fosters analytical, creative problem solving and systems thinking. Graduates who can read the output of AI and make decisions on them to increase their strategic thinking abilities.
- **Adaptability and Lifelong Learning:** Knowledge of AI stimulates curiosity and constant learning, enabling graduates to adjust to technological changes. The paper highlights the necessity of lifelong learning attitudes as AI and new digital tools grow.
- **Better Soft Abilities:** Working alongside AI and automation tools helps strengthen the socio-emotional abilities like resilience, flexibility, and social influence, which are vital to managing human-AI interactions in collaborative workplaces.
- **Practical Experience and Project-Based Learning:** Internships, projects, and collaborations with industry provide students with practical experience in AI applications, empowering them to solve real-world problems and enhancing their chances of obtaining high-demand jobs (Work Economic Forum, 2025).

Moreover, the rapid uptake of generative AI (GenAI) tools such as ChatGPT, Google Gemini, and Microsoft Copilot in higher education is revolutionizing the way that university students acquire their employability skills for the digital workforce. In the AI era, employability now requires not only subject knowledge but also AI literacy, human-AI collaboration skills, and the capacity to critically evaluate AI results. According to the prior study, students can obtain different employability skills with AI-assisted technologies. These include enhanced academic achievement, skills in research, writing and data analysis, and the ability to critically analyze AI products. AI literacy also builds skills like working with AI apps and being conscious of ethical issues, which are highly desired by companies. In general, knowing about AI tools can make students more competitive in the job market because it indicates that they can effectively use the most current technology tools (Portocarrero Ramos et al., 2025; Wut et al., 2025). It may be claimed that graduates with higher AI competencies regard themselves as more aligned with job requirements, more productive, and more prepared to meet labour market changes, which together contribute to their better employment prospects.

Perceived Usefulness

Perceived usefulness is the degree to which a person believes that adopting a certain system enhances his or her job performance (Davis, 1989). The amount to which people would adopt or not adopt a technology is mostly based on how much it will enhance their job performance. In the previous study, perceived usefulness was assessed in connection to the employees' tendency to use AI (Park & Jung, 2021). The cognitive and behavioral attitudes of students change with the use of AI technologies when they see that it is very valuable for their future jobs. Students are not utilizing AI as a substitute to finish their homework for them; they are using it to learn deeply about the technology. This active engagement links basic digital literacy to real workplace competency and directly enhances both internal and external employability. A previous study revealed that the acceptability of AI by students is highly driven by its perceived usefulness, which further affects their AI literacy and perceived employability. Students who see the professional value of AI are much more proactive in acquiring the high-level digital skills that today's employers need (Wut et al., 2025).

In the journal of Behavioral Sciences, the authors proved in a comprehensive study that perceived usefulness has a major impact on student happiness and digital efficacy (Wang & Li, 2024). This efficacy encourages students to be an active, self-directed learner, preparing them to be flexible and adapt when technology in the workplace changes. High PU is a direct predictor of a student's intention to use AI in their routine workflow. This workflow integration reflects the present business context where human-AI collaboration is the norm in a digital workforce environment. Students that understand the utility of AI develop critical evaluation abilities and become very desirable to prospective employers. A study published in the Journal of Teaching and Learning for Graduate Employability utilized the TAM framework and revealed that perceived usefulness is a strong predictor of the actual generative AI adoption. The authors concluded that ensuring students' readiness for AI-driven workplaces—and hence their employability as graduates—can be achieved by raising their positive impressions of the usefulness of AI.

The perceived utility of the AI-assisted tools is a major factor affecting the way students interact with these technologies and acquire the appropriate skills that are critical for employment in a digital workforce. Students are more likely to accept and use AI tools in their learning processes when they perceive AI technologies as useful to achieve learning goals, enhance their productivity, and help them complete tasks more easily. This active engagement helps students develop technical skills, problem-solving capabilities, and digital literacy, which are crucial to their future employment prospects (Rispler et al., 2025). By highlighting the practical benefits and real-world uses of AI tools in a Digital Workforce course, students may be inspired to engage with and understand these technologies, improving their preparation and competitiveness in the growing labor market.

The following is proposed for hypothesis:

H1: Perceived usefulness of AI tools positively influences graduate employability.

Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) is the extent to which students expect that using AI tools (e.g., ChatGPT, generative AI, and AI-powered resume builders) will be easy in the context of AI-assisted tools and university students' employability skills in a Digital Workforce course. It uses Davis's Technology Acceptance Model (TAM) to explore students' perceived ease of use of AI tools in the development of employability skills, including digital literacy, content creation, and job search automation. It also relates to the perceived ability of users to interact and communicate with the AI systems about their needs. A previous study hypothesized that better communication with AI would positively influence AI acceptance. However, findings showed that ease of communication was not significantly related to AI acceptance. This lack of significance is attributed to the familiarity of students with AI tools such as ChatGPT, which they consider user-friendly and simple to manipulate (Wut et al., 2025).

The perceived ease of use of AI-assisted tools can significantly impact the employability skills of university students in a Digital Workforce course by influencing their readiness and capacity to use these tools effectively in their learning and future careers. If students perceive AI tools as easy to use and interact with, they are more likely to integrate them into their academic routines. This routine use will help them develop their ability to use AI for tasks such as data analysis, problem solving, and communication. This capacity leads to the acquisition of skills such as digital literacy, technical competence, and adaptability, which enable students to acquire highly valued skills in a digitalized labor market. Thus, students who have positive perceptions of the ease of use of AI are more likely to demonstrate their capability to utilize AI tools in actual work environments and thus improve their employability prospects (Wut et al., 2025).

Previous research has revealed that perceived ease of use (PEU) has a significant relationship with graduate employability in the application of AI. When students view AI tools as easy to understand and use, they are more likely to adopt and apply these technologies in their academic and professional endeavors. The simplicity of use removes barriers to technology adoption, enabling more involvement and the development of essential skills such as digital literacy, problem-solving, and adaptability—competencies that are highly sought after in the current labor market.

The authors point out that the perceived simplicity of use affects students' views toward AI tools and their behavioral intent to employ them in their learning and work activities. Thus, comfort and familiarity with AI technology driven by perceived ease of use increase students' preparation for AI-enabled employment, which in turn positively impacts their employability chances in a digital workforce (Rispler et al., 2025).

The following is proposed for hypothesis:

H2: Perceived ease of use (PEOU) of AI tools positively influences graduate employability.

AI Usage

Previous research stated that AI use is frequent, and students frequently use AI-assisted tools (e.g., ChatGPT, generative AI, AI-powered resume builders, and Microsoft Copilot) to support course-relevant learning activities and employability skill development. This analysis focuses on four aspects: (1) frequency, which refers to how often students use AI tools (measured in days per week and hours per week); (2) intensity, indicating the depth of engagement with AI tools (measured by the number of tasks completed using AI); (3) purpose, which includes specific use cases in the Digital Workforce (such as writing prompts, resume creation, and project brainstorming); and (4) type, which identifies the specific AI tools used including ChatGPT, Claude, Copilot, and Grammarly (Segbenya et al., 2023). Furthermore, universities need to adopt AI tools to train students to responsibly use them in the workplace. Employers stress that higher education institutions should teach students the skill of responsible AI use. Today, 90% of the world's top 20 universities utilize Google Workspace for Education to deliver AI-powered productivity solutions to students and lecturers (Times Higher Education, 2023).

On the other hand, increased use of AI can harm the development of key employability skills such as critical thinking, as AI tools enhance evidence evaluation and logical reasoning (Hassen, 2025); problem-solving, where systematic thinking improves solutions to difficult problems (Promma et al., 2025); digital literacy, since the direct use of AI develops important digital competence (Asad, 2025); work productivity, as AI usage becomes more efficient and faster, leading to better student work; and professional alignment, with students who use AI more often being more likely to be employed in fields related to their majors. AI affects critical thinking, problem-solving, and digital literacy, according to previous research (Portocarrero Ramos et al., 2025). However, overreliance on AI technologies may then reduce students' active participation and processes of developing cognitive skills. Therefore, appropriate integration and training on AI technologies are essential to ensure that they contribute to employability skills rather than remove them from it in the context of the digital workforce. On the other hand, if guided by institutional regulations and practical assessments, the right and balanced use of AI can enhance skill development by providing research support, aiding learning, and offering access to varied knowledge sources (Segbenya et al., 2023).

The following is proposed for hypothesis:

H3: AI usage positively influences graduate employability.

Self-efficacy

Self-efficacy, which is the belief that individuals can successfully complete tasks and achieve goals, has been linked to career development behaviors, persistence, and employability confidence. In AI-saturated labour markets, this construct is increasingly operationalized as AI self-efficacy (confidence in using AI tools) and career self-efficacy (confidence in managing career tasks), both theorized to mediate between AI exposure and employability outcomes (Li et al., 2025; Zhang et al., 2026). Graduate students can use AI for career preparation (e.g., résumé drafting, interview practice), which is positively related to perceived employability, in part through enhanced career self-efficacy (Mei Liang, 2026). This study will focus on university students who take digital workforce courses that often use AI to do graphic design, copywriting, translating, analyzing data, and other tasks. Graduates with stronger AI competencies and frequent strategic use of AI reported higher employment in their field of study, greater productivity, and better professional alignment, outcomes consistent with enhanced self-efficacy and perceived preparation.

Moreover, having self-efficacy may reduce avoidance by students of unfamiliar AI tools. Previous studies have demonstrated a connection between confidence and prior AI experience, classmates or lecturer support, and lower levels of fear. The authors interpret self-efficacy as an enhancer of AI literacy rather than a replacement for technical skill. Students with high self-efficacy are more likely to engage AI as a learning partner, asking better questions, comparing alternative outputs, correcting errors, and explaining conclusions. This skill is important for employability because employers want independent judgment, not just the ability to produce AI text or code (Fundu, 2025). In this study, students taking a digital workforce course can ask for ideas from AI, and then they will put their ideas to make their assigned tasks meet the requirements demanded from clients.

The following are proposed for hypotheses:

H4: Self-efficacy positively influences graduate employability.

H5: Self-efficacy significantly mediates the relationship between the perceived usefulness of AI tools and graduate employability.

H6: Self-efficacy significantly mediates the relationship between the perceived ease of use of AI tools and graduate employability.

H7: Self-efficacy significantly mediates the relationship between AI usage and graduate employability.

METHODOLOGY

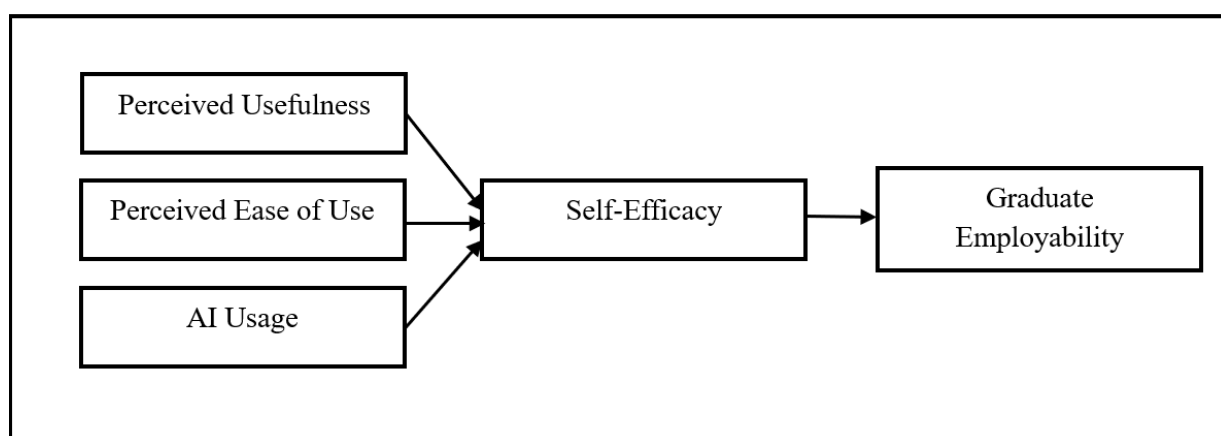
The study employs a conceptual research approach to construct a framework that explains how AI technologies in higher education can boost graduate employability. It uses secondary data from peer-reviewed journal articles, conference proceedings, published studies, and reports, not primary data such as surveys or interviews. The researchers utilize a search of major academic databases, using keywords that combine AI, higher education, skills, employability, and the inclusion of university students or graduates, to identify relevant literature from databases such as Scopus and ScienceDirect. The selected papers are screened, read in full, and thoroughly examined to extract essential ideas (e.g., perceived usefulness, perceived ease of use, AI usage, self-efficacy, and employability skills).

The ideas are then clustered into broader themes and organized into a framework with the use of TAM theory to show how AI tools (inputs) and teaching practices (processes) supported by institutional policies and infrastructure contribute to the development of skills and ultimately graduate employability (outputs). Two complementary qualitative synthesis procedures were employed to turn the retrieved studies into a single conceptual framework. First is thematic synthesis; it is the literature that was coded in five major theoretical themes based on model constructs (perceived usefulness, perceived ease of use, AI usage, self-efficacy, and graduate employability).

Second is conceptual mapping & integrative synthesis; it is the empirical facts extracted that were mapped to identify theoretical linkages (the “arrows”). The stated hypothesis is that the Technology Acceptance Model (TAM) is the main structural lens for direct usage paths. Final remarks summarize and discuss the research results.

Proposed Research Framework

Figure 1



DISCUSSION

The conceptual analysis indicates that the use of AI-assisted tools positively influences the development of key employability skills in university students, such as (1) digital literacy; students learn how to use AI-powered tools that are important for modern workplaces (Mohamad et al., 2025), (2) critical thinking and

problem solving; AI tools provide instant feedback and personalized learning experiences that improve analytical skills, and (3) adaptability; regular use of AI technologies prepares students for rapid technological changes in the digital workforce (Ferreira-Meyers, 2025).

Moreover, this study shows that three factors of TAM influence the effective use of AI-assisted technologies by students. The first is perceived usefulness, where students who regard AI as valuable for learning would utilize it more often. The second is perceived ease of use: user-friendly products enhance adoption rates. Furthermore, AI tools can support several learning outcomes in digital workforce courses. The research conceptualizes that AI-assisted tools help: (1) Career exploration and choice: AI applications assist students in exploring career paths; (2) skill development: AI training boosts critical thinking, communication, and interpersonal skills; and (3) job readiness: AI competency improves overall employment preparation (Marwan, 2020; Mohd Shakil, 2026).

Furthermore, a previous study found that self-efficacy mediates the relationship between students' views of AI tools (usefulness and simplicity of use) and their use of AI tools, as well as the impact of AI tools on graduate employability outcomes. Students' perceived ease of use and perceived usefulness of AI tools positively influence their AI-related self-efficacy, which subsequently promotes their use of AI in academic and career-related tasks and boosts their employability self-confidence (Lan et al., 2026; Paredes-Aguirre et al., 2026; Zhao et al., 2025).

CONCLUSION AND FUTURE RESEARCH

This conceptual paper proposes that embedding AI-assisted tools within a Digital Workforce course can enhance university students' employability abilities by developing their technical, cognitive, and socio-emotional competencies in real-world, highly technological activities. Empirical research shows that students and graduates who actively utilize AI tools (particularly generative AI) report improved employability matches, productivity, and confidence in digitally mediated work, suggesting AI literacy is becoming a differentiating element in the labour market. The paper also emphasizes that the benefits of AI are based upon educational design (e.g., structured tasks, clear ethics and academic integrity guidelines, and opportunities for reflection) such that AI is used to support, not replace, critical thinking, problem-solving, and communication.

The proposed framework defines AI-assisted tools as content and process: students need to learn about AI (conceptual and ethical knowledge) and with AI (using tools to collaboratively create solutions, objects, and reflections) to build work-relevant skills. Integrating AI-supported activities into a Digital Workforce course that is aligned with employability outcomes (e.g., teamwork, adaptability, digital communication, and self-directed learning) may better equip graduates to work in dynamic, AI-intensive workplace environments and support national agendas on digital talent and future-ready human capital.

The proposed conceptual framework needs to be empirically validated further through implementation of AI-assisted interventions in Digital Workforce courses and robust designs (e.g., mixed-method approaches such as quantitative and qualitative surveys) to study their impact on specific employability skills and graduate outcomes. This also could include pre- and post-measures of digital fluency, critical thinking, communication, and self-directed learning, as well as follow-up data on internship performance, employer feedback, or early career paths. Researchers may also be able to compare various pedagogical models (e.g., AI as a tutor, AI as a collaborative partner, and AI as a feedback tool) to identify what combinations of AI functionality and instructional design provide the largest increases in employability-related capacities (Aditya et al., 2024; Portocarrero Ramos et al., 2025).

Another significant direction is to investigate moderating and mediating factors, such as students' AI preparedness, attitudes, ethical awareness, and perceived fairness of AI, and how these variables interact with curriculum design and institutional support. Contextualized studies in Malaysian universities may explore the impact of national policies, institutional strategies, and local industry expectations on the adoption and impact of AI-assisted tools on student employability, including possible disparities across disciplines, institutions, and student demographics. Qualitative and mixed-method research, such as interviews with students, lecturers, and employers; learning analytics; and portfolio analyses, would further expand this understanding of how

students really utilize the AI tool in their courses and how the findings translate into work-relevant competencies (Khadse, 2026; Luo et al., 2023; United Nations Educational Scientific and Cultural Organization, 2021).

LIMITATION AND PRACTICAL IMPLICATIONS

This study has a number of limitations. First, this study is a conceptual work that depends significantly on synthesizing earlier studies on AI, employability, and digital skills rather than presenting direct empirical data from a specific digital workforce course or institutional environment. Therefore, the hypothesized linkages between AI-assisted tools, learning processes, and employability outcomes are theoretically possible but empirically untested in the specific suggested configuration. Second, the majority of the research evaluated are from different fields, countries, and implementations of AI (e.g., AI-based tutors, chatbots, analytics dashboards, and generic generative AI tools), which may limit direct transferability of their findings to a Malaysian digital workforce curriculum (Aditya et al., 2024; Guiyl & Khairul Azhar, 2026; United Nations Educational Scientific and Cultural Organization, 2021).

Third, the available material could be biased towards early adopters and digitally confident students whose positive opinions of AI may not be representative of the wider student population, particularly those with lower levels of digital preparedness and limited access to technology. Fourth, many empirical works quantify employability with self-reported perceptions or intentions (e.g., perceived job readiness, perceived employability), which may not be the same as actual labour market outcomes such as job placement, job quality, or career growth. Finally, ethical, regulatory, and institutional restrictions (i.e., data privacy, plagiarism issues, and institutional AI policies) are continuously evolving; therefore, the conceptual model may need to be revised periodically to keep consistent with emerging guidelines and accreditation requirements (Aditya et al., 2024; Luo et al., 2023; United Nations Educational Scientific and Cultural Organization, 2021).

Several consequences of this study are as follows. First, higher education institutions need to urgently connect academic programs with the reality of the AI-driven job market and upgrade curriculum to integrate AI competencies. AI-driven transformation is increasingly impacting graduate employability, exacerbating issues such as skills mismatches and outdated curriculum (Sozon et al., 2026). Second, foster stronger ties between academics and industry to equip graduates for an AI-driven global economy (Sozon et al., 2026). Third, better prepare students through the integration of AI-driven employment advice, practice interviews, and employability tests (Alzubaidi & Khalid, 2024). Fourth, universities need to invest in ongoing faculty development to increase lecturer preparedness for teaching using AI (Angwaomaodoko et al., 2026).

REFERENCES

1. Aditya, D., Silvestri, K., & Otermans, P. C. J. (2024). Can AI teach me employability? A multinational study in three countries. *Frontiers in Artificial Intelligence*, 7(November). <https://doi.org/10.3389/frai.2024.1461158>
2. Alabri, A., & Shannaq, B. (2025). Enhancing Employability Outcomes Through AI Tools: A Sem-Spls Approach With TAM and Soft Skills Mediation. *Bangladesh Journal of Multidisciplinary Scientific Research*, 10(3), 26–36. <https://doi.org/10.46281/bjmsr.v10i3.2422>
3. Alzubaidi, M. A., & Khalid, U. (2024). Enhancing Graduate Employability With AI in Transnational Higher Education. In *Bridging Global Divides for Transnational Higher Education in the AI Era*. <https://doi.org/10.4018/979-8-3693-7016-2.ch017>
4. Amir-Rudi, A., Abdul Hamid, A. H., Rosmaili, I. I., Abu Seman, S. A., & Abd Rashid, N. (2024). Validating the Acceptance of Artificial Intelligence (AI) in Higher Education Institutions using the Technology Acceptance Model (TAM). *Environment-Behavior Processing Journal*, 137–144.
5. Angwaomaodoko, E. A., Yunusa, E., & Abalaka, F. F. (2026). Higher Education in the Age of Artificial Intelligence: An Empirical Review of Curriculum Relevance and Labour Demands in Nigeria. *International Journal of Education Research*, 09(05), 10–33.

6. Asad, M. M. (2025). Influence of artificial intelligence on students' career competencies and career resources: a global perspective. *The International Journal of Information and Learning Technology*, 4(4). <https://doi.org/10.1108/IJILT-05-2024-0091>
7. Badulescu, D., Simut, R., Bodog, S., Badulescu, A., Simut, C., & Zapodeanu, D. (2025). Shaping AI-related competencies for the labor market and business. A PLS-SEM approach. *International Journal of Computers, Communications and Control*, 20(1), 1–19. <https://doi.org/10.15837/ijccc.2025.1.6894>
8. Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340.
9. DOSM. (2024). Graduate statistics 2023. Department of Statistics Malaysia, December. <https://www.dosm.gov.my>
10. Ferreira-Meyers, K. (2025). Teaching and Learning with AI: Enhancing Graduate Employability in Higher Education. *Proceedings of the 6th Sriwijaya University Learning and Education International Conference 2024 (SULE-IC 2024)*, 2024, 666–676. https://doi.org/10.2991/978-2-38476-390-0_54
11. Guiyl, L., & Khairul Azhar, J. (2026). The Relationship between Student Learning Readiness to Use AI on Technological Competence for Employability Skills Development in Chinese Universities. *International Journal of Academic Research in Progressive Education and Development*, 15(1), 362–377. <https://doi.org/10.6007/ijarped/v15-i1/27416>
12. Hassen, M. Z. (2025). The Impact of AI on Students' Reading, Critical Thinking, and Problem-Solving Skills. *American Journal of Education and Information Technology*, 9(2), 82–90. <https://doi.org/10.11648/j.ajeit.20250902.12>
13. Husin, N. A., Rasli, S., Kumar, M. S. G., & Suppiah, G. (2021). Unemployment Crisis Among Fresh Graduates. *American International Journal of Social Science Research*, 10(1), 1–14. <https://doi.org/10.46281/aijssr.v10i1.1461>
14. Hwang, Y. (2017). What Is the Cause of Graduates' Unemployment? Focus on Individual Concerns and Perspectives. *Journal of Educational Issues*, 3(2), 1–10. <https://doi.org/10.5296/jei.v3i2.11378>
15. Kelly, R. (2024, August 28). Survey: 86% of students already use AI in their studies. *Campus Technology*. <https://campustechnology.com/articles/2024/08/28/survey-86-of-students-already-use-ai-in-their-studies.aspx>
16. Khadse, D. (2026). Empowering the Future Workforce: A Field Study on the Influence of Digital Learning Platforms and AI Tools on. *International Journal of Creative Research Thoughts (IJCRT)*, 14(4), 334–338.
17. Mäkelä, E., & Stephany, F. (2024). Complement or substitute? How AI increases the demand for human skills (Issue December, pp. 1–84). <http://arxiv.org/abs/2412.19754>
18. Marwan, A. (2020). Impact of artificial intelligence on education for employment: (learning and employability framework).
19. Mei Liang (2026). How Does Generative AI Use Become Relevant to University Students' Perceived Employability? A Process-Oriented Model of Career Self-Efficacy. *Frontiers in Education*
20. Mohamad, N. S., Hj Mohamed Yusof, Y., Mohammed, N. H., & Ab Aziz, A. (2025). Investigating the Impact of AI Tools on Students' Digital Literacy and ICT Skill Proficiency. *International Journal of Research and Innovation in Social Science (IJRISS)*, IX(IX), 1175–1189. <https://doi.org/10.47772/IJRISS>
21. Mohd Abdul Kadir, J., Naghavi, N., Subramaniam, G., & Abdul Halim, N. A. (2020). Unemployment among Graduates—Is there a Mismatch? *International Journal of Asian Social Science*, 10(10), 583–592. <https://doi.org/10.18488/journal.1.2020.1010.583.592>
22. Mohd Shakil, S. J. K. (2026). Impact Of AI Tools On Job Readiness and Employability Skills Among Students and Professionals. *INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN TECHNOLOGY*, 12(9), 3758–3767.
23. Muhammad Fadzil Anif (2023). Include graduate unemployment in budget retabbling. <https://www.malaysianow.com/opinion/2023/02/14/include-graduate-unemployment-in-budget-retabbling>
24. Mukherjee Goutam (2026). Decoding how AI has transformed professional education. *The Economic Times*. <https://economictimes.indiatimes.com/industry/services/education/decoding-how-ai-has-transformed-professional-education/articleshow/133005277.cms?from=mdr>
25. Olukayode, L. (2017). Graduate unemployment in Nigeria: Causes, consequences, and remediable approaches. *American International Journal of Contemporary Research*, 7(4), 64.
26. Park, J., & Jung, Y. (2021). Employees' intention to use artificial intelligence: roles of perceived usefulness, trust, and perceived organizational support. *Korean Journal of Industrial and Organizational Psychology*, 34(2), 183–211.

27. Portocarrero Ramos, H. C., Cruz Caro, O., Sánchez Bardales, E., Quiñones Huatangari, L., Campos Trigo, J. A., Maicelo Guevara, J. L., & Chávez Santos, R. (2025). Artificial intelligence skills and their impact on the employability of university graduates. *Frontiers in Artificial Intelligence*, 8(July), 1–15. <https://doi.org/10.3389/frai.2025.1629320>
28. Promma, W., Imjai, N., Usman, B., & Aujirapongpan, S. (2025). Computers and Education: Artificial Intelligence: The influence of AI literacy on complex problem-solving skills through systematic thinking skills and intuition thinking skills: An empirical study in Thai Gen Z accounting students. *Computers and Education: Artificial Intelligence*, 8(January), 1–12. <https://doi.org/10.1016/j.caeai.2025.100382>
29. Rispler, C., Mashiach-Eizenberg, M., & Yakov, G. (2025). Understanding students' perceptions of generative AI: Implications for pedagogy and graduate employability. *Journal of Teaching and Learning for Graduate Employability*, 16(1), 145–170. <https://doi.org/10.21153/jtlge2025vol16no1art2084>
30. Segbenya, M., Bervell, B., Frimpong-Manso, E., Otoo, I. C., Andzie, T. A., & Achina, S. (2023). Artificial intelligence in higher education: Modelling the antecedents of artificial intelligence usage and effects on 21st-century employability skills among postgraduate students in Ghana. *Computers and Education: Artificial Intelligence*, 5(December), 1–13. <https://doi.org/10.1016/j.caeai.2023.100188>
31. Sozon, M., Reongtam, S., & Yin, Y. (2026). Graduate employability in the AI and globalization era: implications for. *Journal of Applied Research in Higher Education*. <https://doi.org/10.1108/JARHE-11-2025-0983>
32. The Star (2024). Malaysia's unemployment rate declines to 3.2% in 2024, says DOSM. <https://www.thestar.com.my/news/nation/2025/11/01/malaysia039s-unemployment-rate-declines-to-32-in-2024-says-dosm>
33. Thiviya (2025). Malaysia graduate numbers hit 5.98 million with unemployment falling to 3.2%.
34. Times Higher Education (2023). Maximizing graduate employability through AI skills. <https://www.timeshighereducation.com/campus/maximising-graduate-employability-through-ai-skills>
35. Tushar, H., & Sooraksa, N. (2023). Global employability skills in the 21st-century workplace: A semi-systematic literature review. *Heliyon*, 9(11), e21023. <https://doi.org/10.1016/j.heliyon.2023.e21023>
36. United Nations Educational Scientific and Cultural Organization. (2021). Understanding the impact of artificial intelligence on skills development. In the International Centre for Technical and Vocational Training. <http://en.unesco>.
37. Wang, L., & Li, W. (2024). The Impact of AI Usage on University Students' Willingness for Autonomous Learning. *Behavioral Sciences*, 14, 956. <https://doi.org/10.3390/bs14100956>
38. Work Economic Forum. (2025). Future of Jobs Report 2025 (Issue January). <https://doi.org/10.1007/978-1-137-40325-4>
39. Wut, T. M., Chan, E. A. Heung, Wong, H. S. Mun, & Chan, J. K. Y. (2025). Perceived artificial intelligence literacy and employability of university students. *Education and Training*, 67(2), 258–274. <https://doi.org/10.1108/ET-06-2024-0272>
40. Yao Charles, A., Amoah-Sei, E., Nabase Razak, B., & Dissou Arthur, Y. (2025). Technology Acceptance and Employability in TVET Graduates. *OA J Applied Sci Technol*, 3(1), 1.