

Evaluating the Relationship between Perceived Ease of Use, Perceived Usefulness, Attitude and Intention to Use AI Technology among TVET Students

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Abstract

Artificial Intelligence (AI) technology is increasingly used to support learning in higher education. However, empirical evidence on TVET students' acceptance of AI technology remains limited particularly in relation to technical and self-directed learning. This study examined the relationship between perceived ease of use, perceived usefulness, attitude and intention to use AI technology among TVET students based on the Technology Acceptance Model (TAM). A quantitative survey design was employed involving 234 first-year undergraduate students from the Bachelor of Vocational Education (ISMPV) and Bachelor of Technology (BTECH) programmes at the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia. Data were collected using a structured questionnaire and analysed using descriptive statistics and Spearman's correlation. The findings showed that students reported high levels of perceived ease of use, perceived usefulness, attitude and intention to use AI technology. Spearman's correlation analysis indicated significant positive relationships between perceived ease of use and intention to use ($\rho = 0.319, p < .001$), perceived usefulness and intention to use ($\rho = 0.466, p < .001$), and attitude and intention to use ($\rho = 0.665, p < .001$). Among the constructs, attitude showed the strongest relationship with intention to use AI technology. These findings suggest that positive student attitudes play a central role in sustaining AI adoption in TVET learning. The study contributes to the application of TAM in AI-supported TVET education and highlights the need for educators to act not only as content providers but also as AI learning coaches and ethical guides.

1. Introduction

Artificial Intelligence (AI) has become an increasingly important technology in education especially in supporting teaching, learning, assessment, feedback and self-directed learning. AI-powered applications such as intelligent tutoring systems, adaptive learning platforms and generative AI tools enable students to access information, receive immediate responses and personalise their learning experiences according to individual needs (Holmes et al., 2019). These developments indicate that AI technology is no longer limited to technological innovation but has become part of the broader transformation of educational practices.

In Technical and Vocational Education and Training (TVET), the integration of AI technology is particularly relevant because TVET students are required to understand technical concepts, apply procedural knowledge, solve practical problems and develop competencies that meet industry demands. AI technology may support these

learning processes by providing interactive explanations, personalised feedback and learning support beyond formal classroom hours (Miao et al., 2021). However, the successful use of AI technology in TVET depends not only on the availability of technology but also on students' acceptance and willingness to use it continuously.

The Technology Acceptance Model (TAM) provides a useful framework for examining students' acceptance of AI technology. TAM explains that users' intention to use technology is influenced by perceived ease of use and perceived usefulness which subsequently shape their attitude and behavioural intention (Venkatesh & Davis, 2000; Venkatesh et al., 2003). Therefore, this study examines the relationship between perceived ease of use, perceived usefulness, students' attitudes, and intention to continue using AI technology among TVET students.

1.1 Background of study

The increasing presence of AI technology in education has reshaped the way students seek explanations, obtain academic support, and manage independent learning tasks. In technical and vocational learning environments, students often need repeated explanation, guided practice and immediate clarification to understand technical procedures and concepts. AI tools can provide flexible learning assistance that complements conventional teaching by offering instant responses, examples and personalised learning pathways (Crompton & Burke, 2023).

Within TVET, AI technology adoption is closely associated with the development of digitally competent graduates who are able to operate in technology-driven industries. However, technology integration should not be viewed merely as the introduction of digital tools. It requires an understanding of how students perceive the technology, whether they consider it useful for technical learning, and whether they intend to continue using it as part of their self-directed learning practices. This makes the acceptance perspective essential for evaluating AI integration in TVET education.

TAM is appropriate for this study because it explains how perceived ease of use and perceived usefulness influence attitudes and behavioural intention to use technology. In the context of AI-supported TVET learning, perceived ease of use may include students' ability to access AI tools, interact with the system and obtain learning feedback with minimal difficulty. Perceived usefulness refers to the extent to which students believe AI helps them understand technical concepts, complete learning tasks, and support self-directed learning. Figure 1 shows the TAM Model.

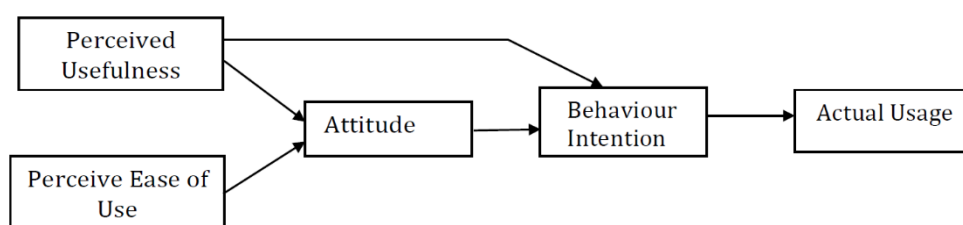


Fig 1: *Technology Acceptance Model (TAM)*

1.2 Problem Statement and Research Gap

Although AI technology offers personalized and immediate learning support, the educational value depends on how students perceive and use it in actual learning contexts. In TVET, students are expected not only to retrieve information but also to integrate technical concepts, apply procedures and solve authentic problems. Therefore, AI adoption in TVET must be examined beyond general technology usage and should focus on whether students perceive AI technology as easy to use, useful and supportive of continued learning.

Previous research has widely discussed AI technology in higher education, intelligent tutoring systems, learning analytics and ethical issues in AI-supported learning (Chen et al., 2020). However, empirical studies focusing specifically on AI technology acceptance among TVET students remain relatively limited particularly in the Malaysian higher education fields. This gap is important because TVET students experience different learning demands compared with students in purely academic programmes especially in relation to technical understanding and practical application.

Another issue concerns the changing relationship between students, educators and AI tools. Students may find AI technology useful because it provides immediate responses and allows them to ask questions without fear of judgement. However, this does not mean that educators become less important. Instead, educators need to guide students in evaluating AI-generated information, applying AI ethically and connecting AI-supported explanations with technical reasoning and practical skills (Miao et al., 2021). Thus, examining students' acceptance of AI technology may provide valuable information for designing more meaningful and responsible learning environments.

1.3 Research Objectives

1. To determine the level of perceived ease of use of AI technology among TVET students in the learning process.
2. To determine the level of perceived usefulness of AI technology in supporting TVET students' technical and academic understanding.
3. To examine TVET students' attitudes toward the use of AI technology in learning.
4. To determine TVET students' intention to continue using AI technology for self-directed learning.
5. To examine the relationship between perceived ease of use, perceived usefulness, attitude, and intention to continue using AI technology among TVET students.

2. Methodology

2.1 Research Design

This study employed quantitative survey design. A descriptive and correlational approach was used to determine the level of perceived ease of use, perceived usefulness, attitude, and intention to use AI technology, and to examine the relationships among the constructs. The survey design was appropriate because the study aimed to collect responses from a relatively large group of TVET students and analyse patterns of technology acceptance using statistical techniques.

2.2 Population, Sample and Sampling Method

The target population consisted of first-year TVET undergraduate students enrolled in the Bachelor of Vocational Education (ISMPV) and Bachelor of Technology (BTECH) programmes at the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia. The estimated population was 1,054 students. Based on the Krejcie and Morgan (1970) sample size table, a sample of 234 respondents was considered adequate. Simple random sampling was used to provide each student in the target population with an equal chance of being selected.

2.3 Research Instrument

A structured questionnaire was used as the research instrument. The questionnaire consisted of five sections which are demographic information, perceived ease of use of AI technology, perceived usefulness of AI technology, attitude toward the use of AI technology and intention to continue using AI technology. Sections B to E were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 1 presents the breakdown of items and the sources of the questionnaire used in this study.

Table 1: Section and number of items in the questionnaire form and feedback form

Section	Construct	Number of items
A	Demography	6
B	Perceived Ease of Use of AI Technology	5
C	Perceived Usefulness of AI Technology	11
D	Attitude Toward the Use of AI Technology	7
E	Intention to Continue Using AI Technology	5

2.4 Validity and Reliability

The questionnaire was reviewed by three experts from the FPTV to ensure the validity and reliability. The experts reviewed the clarity, relevance, language and also the alignment of the items with the constructs. A pilot study was then conducted to examine the internal consistency of the questionnaire using Cronbach's Alpha. All constructs recorded values above 0.70, indicating acceptable to excellent reliability. Table 2 presents the reliability analysis of the questionnaire used in this study.

Table 2: *Reliability Analysis of the Questionnaire*

Construct	Cronbach's alpha	Interpretation
Perceived Ease of Use of AI Technology	0.882	Excellent
Perceived Usefulness of AI Technology	0.922	Excellent
Attitude Toward the Use of AI Technology	0.864	Excellent
Intention to Continue Using AI Technology	0.813	Excellent

2.5 Data Collection Procedure

Data were collected using an online questionnaire distributed to TVET students through digital communication channels such as WhatsApp and social media. Respondents were informed of the purpose of the study and were required to complete the questionnaire voluntarily. The collected data were screened and analysed using IBM SPSS Statistics Version 27.

2.6 Data Analysis

Descriptive statistics including frequency, percentage, mean and standard deviation were used to describe respondents' demographic profiles and levels of agreement for each construct. The interpretation of mean scores was based on three levels which are low (1.00-2.33), moderate (2.34-3.67) and high (3.68-5.00). Normality analysis showed that the data did not meet normality assumptions. Therefore, Spearman's correlation was used to examine the relationships between perceived ease of use, perceived usefulness, attitude, and intention to continue using AI technology.

3. Results and Discussion

This study involved a data collection process using questionnaires distributed to first-year students from the Faculty of Technical and Vocational Education (FPTV). Following data collection, the data were analyzed based on the research questions to ensure that the findings align with the study's objectives. The analysis covered both descriptive and inferential aspects to comprehensively support the research objectives.

3.1 Demography

The analysis in Table 3 provides an overview of the background of respondents involved in this study. Demographic information was collected through the distribution of questionnaires and responses submitted via Google Forms by TVET students. The study sample consists of 234 first-year TVET students from the Faculty of Technical and Vocational Education (FPTV). Overall, this demographic analysis covers several key aspects including gender, age, education level, learning status and frequency of AI technology usage. The findings from this analysis help the researcher to understand the general profile of the respondents and offer clearer context for interpreting the study data in the subsequent sections. A summary of the information is presented in Table 3.

Table 3.: Summary of Demographic Background Analysis

Item	Construct	Frequency (N=234)	Percentage (%)
Age	18 - 20	117	50.0
	21 - 25	70	29.9
	26 - 35	47	20.1
	35 - 45	0	0
Gender	Male	140	59.8
	Female	94	40.2

Item	Construct	Frequency (N=234)	Percentage (%)
Level of Education	Bachelor's Degree	234	100
	Master's Degree	0	0
	Doctor of Philosophy	0	0
Learning Status	Full Time	234	100
	Part Time	0	0
Frequency in using AI technology	Very Rarely	2	0.9
	Once a Month	4	1.7
	Once Every Two Weeks	4	1.7
	Once a week	2	0.9
	2-4 times a week	48	20.5
	Once a day	93	39.7
	Several times a day	81	34.6

The background analysis of the respondents is summarized as follows. In terms of age, most respondents were between 18 and 20 years old comprising 117 individuals (50.0%), followed by 70 respondents (29.9%) aged between 21 and 25 years and 47 respondents (20.1%) aged between 26 and 35 years. There were no respondents in the 35–45 age group. For gender, male students represented a slight majority with 140 individuals (59.8%), while female students accounted for 94 (40.2%). Regarding the level of education, all 234 respondents (100%) were bachelor's degree students reflecting the study's specific focus on first-year undergraduates from FPTV. All respondents were also full-time students. In terms of AI technology usage frequency, the largest group consisted of students who used AI technology once daily (93 respondents, 39.7%), followed by those who used it several times a day (81 respondents, 34.6%) and 2–4 times a week (48 respondents, 20.5%), indicating a high level of consistent use among these groups. On the other hand, a small number of students used technology AI less frequently including once a month (4 respondents, 1.7%), once every two weeks (4 respondents, 1.7%), once a week (2 respondents, 0.9%), and very rarely (2 respondents, 0.9%). These findings suggest that although some students use technology AI less frequently, there is still a general awareness and exposure to the technology across the sample.

3.2 Perceived Ease of Use of AI technology in learning among TVET students

The item with the highest mean score was "I am able to use AI technology to search for information easily without difficulty" (mean = 4.33), followed by "I can easily access AI technology through various devices such as computers or smartphones" and "I am able to interact smoothly with AI to receive feedback in my learning," both with a mean score of 4.32. These findings indicate that students feel very comfortable using AI technology in their daily academic tasks. Overall, the analysis reflects that students have a high level of perceived ease of use towards AI technology. Table 4 shows the result for students' ease of use when using AI technology in learning.

Table 4: *Perceived Ease of Use when using AI Technology in learning.*

Item	Statement	Mean	Standard Deviation	Level
B1	I find AI technology easy to use in completing my academic tasks and learning activities.	4.08	0.897	High
B2	I can easily access AI technology through various devices such as computers or smartphones.	4.32	0.948	High

Item	Statement	Mean	Standard Deviation	Level
B3	I am able to use AI technology to search for information easily without difficulty.	4.33	1.028	High
B4	I can use technology AI effortlessly to obtain the answers I need.	4.21	0.844	High
B5	I am able to interact smoothly with technology AI to receive feedback in my learning.	4.32	0.955	High

The findings of the study indicate that the level of ease of use of AI technology among TVET students is high. Overall, this result shows that TVET students from ISMPV and BTECH have a positive perception of their ability to access and effectively use AI technology in their assignments or daily learning activities. This suggests that the students feel comfortable, confident, and capable of using AI technology with ease in their daily learning.

This finding is consistent with many previous studies which have stated that ease of use is one of the key factors influencing students' acceptance of new technology. Davis (1989) explained that perceived ease of use (PEOU) directly affects perceived usefulness and users' attitudes toward technology. According to Sudaryanto et al. (2023), students are more likely to accept and use new technologies when they are user-friendly and easily accessible. The ease of using a particular technology can help reduce psychological barriers that students may experience while learning and adapting to new technologies (Grace & Ayuningtyas, 2024). Therefore, the aspect of perceived ease of use should be given attention when considering the use of AI technology in the learning process (Sudaryanto et al., 2023).

When the technology is easy to understand and use, it enhances students' confidence and comfort thereby encouraging them to accept and apply AI technology in the learning process (Grace & Ayuningtyas, 2024). For example, the level of perceived ease of use has a significant influence on university students' intention to use AI-based learning platforms (Amir-Rudin et al., 2025).

3.3 Perceived Usefulness of AI technology among TVET students

The item with the highest mean score was "I believe that exercises or assignments involving AI technology help improve my understanding of technical skills" with a mean of 4.38 and a standard deviation of 0.853. This indicates that students perceive AI-related tasks as highly beneficial in enhancing their comprehension of technical skills. The second-highest item was "I feel that AI technology meets my learning needs according to my level of understanding" (mean = 4.36) reflecting the ability of AI technology to adapt to individual students' learning requirements. In addition, students also demonstrated confidence in understanding technical concepts through AI technology. Items such as "I feel more confident in understanding complex technical concepts after using AI technology" (mean = 4.35) and "I am able to understand technical concepts more clearly and in-depth with the help of AI technology" (mean = 4.25) suggest that students not only gained understanding but also felt more confident in explaining and articulating those concepts.

Findings also revealed that AI technology assists students in applying technical concepts in real-world contexts. This is supported by items such as "I am better able to apply technical concepts in specific situations after using AI technology" (mean = 4.10) and "I find that using AI technology improves my skills in understanding and applying technical concepts" (mean = 4.21). In terms of communication and confidence, students also responded positively. The item "I feel more confident in explaining technical concepts to peers or instructors after using AI technology" (mean = 4.27) shows that AI technology not only enhances understanding but also boosts students' confidence in sharing knowledge with others.

The item with the lowest mean score, though still within the high category was "I am able to better understand the relationship between technical concepts in learning through the use of AI technology" (mean = 4.03, SD = 1.014). Although this item recorded the lowest score, it still indicates that most students believe AI technology helps in understanding the interrelationship of technical concepts. Overall, this analysis demonstrates that students rate the effectiveness of AI technology at a very high level. AI technology is not only effective in helping students understand technical concepts but also in enhancing their confidence, motivation and ability to apply what they have learned in real-world situations. Table 5 shows the result of the perceived usefulness of AI Technology Usage.

Table 5: *Perceived Usefulness of AI technology Usage*

Item	Statement	Mean	Standard Deviation	Level
C1	I feel that the use of AI technology enriches my learning experience.	4.28	0.868	High
C2	I find that using AI technology makes it easier for me to understand technical concepts in my studies.	4.22	0.950	High
C3	I am able to grasp technical concepts more deeply and clearly with the help of AI technology.	4.25	1.019	High
C4	I am more confident in understanding complex technical concepts after using AI technology.	4.35	0.930	High
C5	I am able to understand the relationship between technical concepts in learning more effectively through the use of AI technology.	4.03	1.014	High
C6	I can apply technical concepts more effectively in specific situations after using AI technology.	4.10	0.876	High
C7	I feel more confident in explaining technical concepts to peers or instructors after using AI technology.	4.27	0.981	High
C8	I feel that AI technology meets my learning needs according to my level of understanding.	4.36	0.921	High
C9	I am able to master technical concepts more effectively using AI technology.	4.07	0.965	High
C10	I find that the use of AI technology enhances my skills in understanding and applying technical concepts.	4.21	0.852	High
C11	I believe that exercises or assignments involving AI technology help improve my understanding of technical skills.	4.38	0.853	High

Findings of the study indicate that TVET students have a highly positive perception of the effectiveness of using AI technology in learning. This is because AI technology is seen as a useful learning tool, particularly in helping TVET students understand complex technical concepts and apply skills effectively.

According to Amir-Rudin et al. (2025), perceived usefulness (PU) refers to the extent to which an individual believes that using a particular technology can enhance their performance and ease the tasks being carried out. AI technology can improve students' ability to understand and explain difficult concepts through the visual aids and interactive responses it provides. For students, perceived usefulness refers to how they see generative AI technology as beneficial or helpful to their overall learning process (Mizan & Norman, 2024). TVET students are more likely to continue using the technology when it provides immediate and effective feedback in guiding them through technical tasks.

According to Brown and Tan (2023), integrating AI technology into the higher education curriculum can help students build a strong foundation of knowledge while equipping them with relevant skills that align with the rapidly evolving digital world. Overall, these findings support the original TAM model, which states that perceived usefulness is a key driver in influencing students' attitudes and intentions toward the use of technology (Davis, 1989).

3.4 Students' attitude toward the use of AI technology in the learning process.

The highest-rated item was "I become more active and engaged during learning sessions when using AI technology" with a mean score of 4.21, followed by "I feel more motivated to learn as a result of engaging interactions with AI technology" (mean = 4.20). These findings indicate that the use of AI technology successfully enhances students' motivation and engagement during the learning process. Meanwhile, the items "I feel more comfortable receiving answers and asking questions through AI technology compared to lecturers" and "I find AI technology helpful in overcoming learning challenges, but I still need additional resources for support" obtained mean scores of 4.04 and 4.07, respectively. This suggests that while students appreciate AI technology as a helpful tool, they still require complementary resources such as supplementary reference materials. Overall, these findings demonstrate that students hold a positive and open attitude toward the use of AI technology, particularly in terms of engagement, motivation and learning support. Table 6 shows the students' attitude toward the use of AI technology in the learning process.

Table 6: *Students' attitude toward the use of AI technology in the learning process.*

Item	Statement	Mean	Standard Deviation	Level
D1	I find that AI technology helps me overcome learning challenges, but I still need additional resources for support.	4.07	1.048	High
D2	I feel more comfortable getting answers and asking questions through AI technology compared to lecturers.	4.04	0.944	High
D3	I feel more motivated to learn after using AI technology.	4.18	0.835	High
D4	I am more interested in attending learning sessions after using AI technology.	4.14	1.039	High
D5	I am able to maintain focus during learning sessions with the help of AI technology.	4.19	0.953	High
D6	I become more active and engaged during learning sessions when using AI technology.	4.21	0.937	High
D7	I feel more enthusiastic about learning as a result of engaging interactions with AI technology.	4.20	0.902	High

The findings of the study indicate that students have a very positive attitude towards the use of AI technology in learning. This suggests that the use of AI technology can enhance students' interest and direct engagement in their learning activities. This finding aligns with Davis (1989), who stated that students' attitudes towards technology depend on their perceptions of its ease of use and effectiveness. Previous studies have shown that students perceive generative AI as beneficial because it helps complete tasks, provides quick information, supports personalized learning and enhances productivity (Sabli et al., 2024). Students' attitudes towards the use of AI technology reflect how they respond emotionally and cognitively to the technology whether positively or negatively which in turn influences their willingness to continue using it in learning (Mizan & Norman, 2024).

Students' attitudes towards AI technology become more positive if they have experienced interactive and enjoyable learning using the technology. Other studies have reported that users who are more familiar and comfortable engaging with AI technology tend to exhibit more positive attitudes towards its use (Yilmaz et al., 2023). Students' perceptions of AI-based applications vary and are heavily influenced by daily needs, academic demands and individual preferences (Radzali et al., 2024). Interaction with user-friendly AI technology systems can improve students' attitudes towards using the technology in the long term.

3.5 The level of student intention to continue using AI technology in the learning process

The highest-rated item was "I feel more comfortable getting answers and asking questions through AI technology compared to my lecturer" (mean = 4.37), indicating that students are genuinely confident and comfortable using AI as a primary support resource. In addition, other items such as "I am able to maintain focus during learning

sessions with the help of AI technology” (mean = 4.22) and “I am more interested in attending learning sessions after using AI technology” (mean = 4.12) further reinforce the positive influence of AI on the learning environment. These results suggest that the integration of AI technology contributes significantly to sustaining student attention and increasing enthusiasm for participation in educational activities. AI technology ability to present information in personalized, engaging and interactive ways may be key factors in enhancing students’ focus and interest.

Although the item “I feel more motivated to study after using AI technology” received the lowest mean score among the listed items (mean = 4.06), it still falls within the high category. This implies that, even at its lowest point, students’ motivation to learn through AI remains strong, and the technology continues to have a meaningful impact on their academic drive. The slight variation in mean scores among the items may reflect individual differences in how students experience and internalize AI technology benefits but overall attitudes remain favourable. This indicates that students have a high level of trust in the effectiveness and ease of use of AI technology in enhancing their learning experience. Table 7 shows the student’s intention to continue using AI technology in the learning process.

Table 7: *Students’ intention to continue using AI technology in the learning process*

Item	Statement	Mean	Standard Deviation	Level
E1	I find that AI technology helps address learning challenges, but I still need additional resources for support.	4.27	0.829	High
E2	I feel more comfortable getting answers and asking questions through AI technology compared to asking my lecturer.	4.37	0.835	High
E3	I feel more motivated to learn after using AI technology.	4.06	0.889	High
E4	I am more interested in attending learning sessions after using AI technology.	4.12	0.953	High
E5	I am able to maintain focus during learning sessions with the help of AI technology.	4.22	0.959	High

The intention to use a technological system is an important factor that can determine whether a user will benefit from the system or not (Noor & Ismail, 2024). Students’ intention to use AI technology increases when they have enjoyable and interactive experiences while using the system. AI technology that offers self-directed learning features provides students with greater freedom in managing their own learning. This significantly influences their intention to continue using AI technology even outside the classroom. Table 7 shows the students’ intention to continue using AI technology in the self-learning process.

A responsive AI technology that caters to students’ needs will enhance their willingness to use it in the long term. AI technology can be seen as a crucial piece that completes the overall picture of a student’s learning journey (Muharam, 2023). Students perceive AI technology as a tool that not only assists with technical aspects but also enhances creativity and the quality of their work. Therefore, they tend to have a positive intention to integrate AI technology into their self-directed learning routines (Muharam, 2023). This finding suggests that students consider AI technology an accessible and responsive learning support tool. However, this should be interpreted as a preference for immediate learning support rather than a replacement for educators.

3.6 The relationship between perceived ease of use, perceived usefulness, students’ attitudes and their intention to continue adopting AI technology in learning.

To determine the relationships between the variables in this study, the researcher conducted a Spearman’s correlation analysis. This non-parametric test was selected due to the ordinal nature of the data and to assess the strength and direction of association between the constructs within the proposed framework. The results of the analysis indicated that all variables in the study demonstrated statistically significant and positive correlations with one another at the $p < 0.01$ level. This indicates that as the levels of perceived ease of use, perceived usefulness or students’ attitudes toward AI technology increase, so does their intention to continue using the technology.

The relationship between perceived ease of use and students’ intention to continue using AI technology showed a moderate positive correlation ($\rho = 0.319$, $p < .001$). This suggests that the easier AI technology is to use,

the more likely students are to continue using it in their learning. Perceive Ease of use plays a significant role in shaping students' desire for continued technology adoption.

Similarly, the relationship between perceived usefulness of AI technology and students' intention to use it also showed a moderate positive correlation ($\rho = 0.466$, $p < .001$). This means that students who perceive AI technology as having a positive impact on their learning are more inclined to continue using it. Perception of effectiveness directly contributes to a stronger intention to adopt the technology.

Lastly, the relationship between students' attitudes toward AI technology and their intention to continue using it yielded the highest correlation ($\rho = 0.665$, $p < .001$), indicating a strong and significant relationship. This shows that students with a positive attitude toward AI technology clearly demonstrate a higher intention to keep using it in the future. Attitude emerges as the strongest influencing variable on students' intention in this context.

Overall, these findings support the TAM which suggests that perceptions of ease of use and usefulness shape user attitudes that influence behavioural intention. In this study, student attitude acts as a key mediator between technology perception and intention thereby confirming the core assumptions of TAM. The significant relationships among all four variables provide strong support for the model's applicability in explaining AI technology usage behaviour among TVET students.

The presence of statistically significant and positively correlated relationships among all four constructs which is perceived ease of use, perceived usefulness, attitude toward use and intention to use validates the applicability and robustness of the TAM framework in explaining technology acceptance behaviour among TVET students. These findings not only reinforce the relevance of TAM in the context of AI technology integration in education but also offer valuable insights for educators and developers in designing more effective and user-friendly AI tools for technical and vocational learning environments. Table 8 shows the result of the relationship between perceived ease of use, perceived usefulness and students' attitudes and their intention to continue adopting AI technology in learning.

Table 8: Spearman's Correlation Analysis

Variables		Perceived Ease of Use of AI Technology	Perceived Usefulness of AI Technology	Students' Attitude Towards the Use of AI Technology
Students' Intention to Continue Using AI Technology	Spearman's Rho	0.319	0.466	0.665
	Sig. (2-tailed)	< .001	< .001	< .001
	N	234	234	234

The findings show a significant positive relationship between perceived ease of use, perceived usefulness and students' attitudes toward their intention to continue using AI technology. TVET students who find AI technology easy to use and helpful in their learning are more likely to continue using it. This aligns with the TAM Model by Davis (1989) which explains that perceptions of ease of use and usefulness shape users' attitudes and ultimately influence their intention to use the technology. AI technology also has the potential to be tailored to individual learners' needs, making it a flexible and effective learning tool (Muharam, 2023).

Several studies reveal that students' confidence and skills in using AI technology are also key factors influencing their intention to continue using it especially in self-directed learning contexts. Ongoing support such as training and technical assistance provided by TVET institutions can enhance this confidence. Additionally, AI technology effectiveness in presenting content clearly and visually helps students feel more confident and interested in using it consistently. Socioeconomic background, cultural environment and students' prior experience with technology also shape their attitudes and interest in adopting AI technology in their learning (Mizan & Norman, 2024).

Students' attitudes play the most significant role in influencing their intention to use AI technology. Positive experiences using AI technology such as receiving immediate feedback and enjoying interactive learning encourage continued usage voluntarily and with genuine interest. Technology AI ability to adapt to students' needs through artificial intelligence adds unique value to the learning experience (Anuar & Hamzah, 2024). Therefore, TVET institutions should focus on improving usability, demonstrating the effectiveness of AI technology and fostering positive attitudes to ensure students remain motivated to integrate AI technology into their learning process.

4.0 Discussion

4.1 Students' Acceptance of AI Technology in TVET Learning

The findings indicate that TVET students have a high level of acceptance of AI technology in learning. The high mean scores for perceived ease of use suggest that students are generally able to access, interact with and obtain information from AI technology without major difficulty. This finding supports the central assumption of TAM which explains that users are more likely to accept technology when they perceive it as easy to use and useful (Davis, 1989; Venkatesh & Davis, 2000). Other than that, Sudaryanto et al. (2023) found that ease of use and perceived usefulness influence students' adoption of AI technology. Grace and Ayuningtyas (2024) stated that perceived ease of use reduces psychological barriers when students adapt to new technology.

The high frequency of AI usage among respondents further suggests that AI technology is already part of students' learning routines. Most respondents used AI technology once a day or several times a day showing that AI technology is not an unfamiliar tool among the sample. This finding is supported by Radzali et al. (2024) who reported frequent use of AI applications among students. Valerio (2024) mentioned that students' perceptions of AI technology are shaped by their experience and awareness of AI capabilities and limitations. In the TVET field, regular exposure to AI technology may increase students' confidence in using AI to support both academic and technical learning tasks.

However, high acceptance should not be interpreted as evidence that AI technology can automatically improve learning outcomes. The literature emphasizes that AI technology can support learning through personalized feedback, adaptive assistance and access to information. But the effectiveness depends on how it is integrated into pedagogical practice (Chen et al., 2020). Therefore, institutions should ensure that AI technology adoption is accompanied by structured guidance, digital literacy and appropriate learning design.

4.2 Perceived Usefulness and Technical Learning

The perceived usefulness findings show that students believe AI technology supports their technical and academic understanding. Items related to exercises, assignments, confidence in understanding complex concepts and learning support according to students' level of understanding recorded high mean scores. This suggests that students view AI technology as a useful tool for supporting technical learning especially when it provides explanations, examples and immediate feedback. This finding aligns with Mizan and Norman (2024), who explained that perceived usefulness in generative AI refers to how students view AI as beneficial to their learning process. Amir-Rudin et al. (2025) stated that perceived usefulness is important in validating AI technology acceptance in higher education.

The finding also supports previous studies that describe AI technology as a tool that can enhance learning experiences through interactive support, adaptive content and feedback (Chen et al., 2020). In TVET, this is significant because students are required to understand technical knowledge and apply it in practical or work-based learning. As industries and job markets continue to evolve, higher education institutions should integrate AI technologies into teaching and learning to help students develop the technical skills needed to succeed in their future careers (Deckker & Sumanasekara, 2024). Therefore, students' positive perception of AI usefulness indicates that AI technology may be accepted as a complementary tool in technical and vocational learning environments.

Nevertheless, the lowest mean score within the perceived usefulness construct was related to students' ability to understand the relationship between technical concepts through AI technology. Although the score remained high, this result is important because TVET learning requires students not only to understand isolated concepts but also to integrate multiple technical ideas into practical problem-solving situations. This finding suggests that AI technology may be useful for explaining individual concepts but students may still need educator guidance to synthesize technical knowledge, evaluate AI-generated explanations and apply concepts in authentic workshop or industry-based contexts. This supports the view that AI technology should complement rather than replace structured instruction and practical learning experiences (Hamid et al., 2023).

Therefore, AI technology should not just be seen as a tool for delivering information. In TVET, AI-supported learning should focus more on practical and active learning activities such as problem-solving tasks, troubleshooting scenarios and assignments that require students to compare, verify and justify the generated answers. This approach helps students think more deeply instead of simply accepting answers from AI technology without question. This is confirmed by Brown and Tan (2023) who emphasized that integrating AI technology in higher education should strengthen students' knowledge base as well as their relevant digital skills. In addition, Sabli et al. (2024) highlighted that AI technology can support more personalized and interactive learning experiences, making learning more engaging and effective for students.

4.3 Attitude as the strongest factor related to intention

The correlation analysis showed that attitude had the strongest relationship with intention to continue using AI technology. This indicates that students' positive emotional and cognitive responses toward AI technology are central to their intention to continue using it. This finding is consistent with TAM which positions attitude as an important factor

in shaping behavioral intention (Davis, 1989). It also supports Mizan and Norman (2024) who explained that students' attitudes toward AI technology reflect their emotional and cognitive responses to the technology and influence their willingness to continue using it in learning.

In the TVET field, students' attitudes toward AI may be influenced by the extent to which AI technology helps them remain focused, participate actively and feel more confident in technical learning. The high mean scores for engagement, enthusiasm and motivation indicate that students perceive AI technology as an interactive and supportive learning tool. This is aligned with Yilmaz et al. (2023) who found that students who are familiar and comfortable with AI technology tend to show more positive attitudes toward its usage. Radzali et al. (2024) confirmed that students' perceptions of AI technology are influenced by academic demands, daily routines and individual needs.

The significant relationship between attitude and intention to use indicates that simply introducing AI tools into the learning environment is insufficient to encourage their continued use. To foster positive attitudes, educational institutions should integrate AI technology to become meaningful learning activities rather than treating it as an additional technology. Educators also play an important role in helping students develop the skills needed to use AI technology effectively. Rather than relying on AI-generated responses without question, students should be encouraged to evaluate the information critically, use AI tools with responsibility and apply it appropriately when solving technical and practical problems. These learning experiences can increase students' confidence in using AI technology and strengthen their intention to use it as part of their academic learning. This finding is consistent with Otto et al. (2024) who highlighted the usefulness of the TAM in explaining students' acceptance of AI-based feedback systems.

4.4 Implications for the role of TVET Educators

One of the most important findings is that students reported comfort in asking questions and obtaining answers through AI technology. This may be due to AI technology ability to provide immediate responses, repeated explanations and a low pressure environment where students do not feel judged for asking basic questions. This pattern is consistent with studies suggesting that AI applications can provide quick information, personalized support and learning assistance (Mizan & Norman, 2024). However, this should not be interpreted as evidence that educators are less relevant.

Instead, the role of TVET educators may need to shift from being primarily content providers to becoming AI technology learning coaches, ethical guides and facilitators of technical reasoning. Educators should guide students in evaluating the accuracy of AI-generated information, identifying limitations in responses, applying AI ethically and connecting explanations to practical and industry-based fields. This is important because previous studies have highlighted concerns regarding ethical issues, reliability and responsible use of AI technology in learning (Anuar & Hamzah, 2024).

In practice, TVET educators can integrate AI technology into learning by designing activities that encourage students to use AI as a learning support tool. Students should be guided to verify AI-generated information using reliable sources, explain the technical concepts behind their answers and apply what they have learned through practical tasks. This approach can help ensure that AI strengthens rather than weakens students' technical learning. It also responds to concerns raised by Hamid et al. (2023) regarding the need to understand how AI technology affects student engagement and learning in TVET institutions.

4.5 Implications for AI-integrated TVET Curriculum Design

The findings suggest that AI integration in TVET should be planned at the curriculum level. AI tools can be embedded into self-directed learning activities, problem-based learning and reflective assignments. However, curriculum developers should ensure that AI technology use encourages higher-order thinking rather than simple answer-seeking behavior. The rapid development of AI technology has led to the introduction of various tools and applications that have the potential to enhance learning experiences in TVET programs (Bakar et al., 2024). Besides, Rosyadi et al. (2023) stated that AI technology has an important role in vocational education when it is integrated meaningfully.

The relatively lower score for understanding the relationships between technical concepts indicates that AI technology should be integrated into the TVET curriculum in ways that help students develop a deeper understanding of technical knowledge. Instead of using AI only to obtain quick answers, students should be encouraged to use it to explore technical problems, compare different explanations, identify connections between technical concepts or even explain why a particular solution is the most appropriate. Learning activities like these can improve students' critical thinking and strengthen their technical understanding. This implication is supported by Chen et al. (2020) who suggested that AI technology can enhance learning by providing personalized and adaptive learning experiences. Similarly, Sabli et al. (2024) reported that AI technology creates more flexible and interactive learning environments. This will enable students to learn according to their individual needs and pace.

Future studies should look more deeply into why students feel more comfortable using AI technology and how this comfort influences their relationship with lecturers, ability to learn independently and technical thinking skills. Using qualitative methods like interviews or focus groups would help researchers understand the real reasons behind students preferring to ask questions through AI tools such as getting instant feedback, not feeling judged or simply because AI is always available. This is in line with the need to better understand students' overall views and ethical concerns when using AI technology (Valerio, 2024).

5. Conclusion

This study looked at how TVET students feel about using AI technology in their learning based on the TAM Model. It focused on perceived ease of use, perceived usefulness, attitude and students' intention to keep using AI technology in learning. Overall, the results showed that students generally felt AI technology was easy to use, gave benefits for their studies and they had a positive attitude towards it. Students also showed a strong intention to continue using AI technology in their learning. Among all the factors, attitude had the strongest connection with students' intention to use AI. In simple terms, the findings suggest that TAM is still relevant in explaining how students accept AI technology in a TVET learning environment. This shows that AI technology can really help students with their technical learning because it is easy to use, helpful and fits their learning needs. But AI technology should not just be used as a tool to get quick answers. Lecturers still play an important role in guiding students to use AI technology in a smarter way like helping them understand concepts better, think critically, make ethical decisions and solve real technical problems instead of just copying answers.

However, this study has some limitations. It only involved first-year TVET students from selected programmes at one university so the results may not fully represent all TVET students. The data was also based on self-reported questionnaires which means responses depend on how honestly and accurately students answered. There is also a possibility that some questions may overlap between attitude and intention. For future research, it would be better to include students from different TVET institutions so the findings are more generalizable. It would also be useful to compare different types of AI tools used in learning. On top of that, qualitative methods like interviews or focus groups could help to understand more deeply why students feel comfortable using AI technology in their studies. This can also give better view of how the role of educators is changing in TVET education.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript.

Author Contribution

*The authors confirm contribution to the paper as follows: **study conception and design:** Nur Amalia binti Tugiman, Nizamuddin bin Razali; **data collection:** Nur Amalia binti Tugiman; **analysis and interpretation of results:** Nur Amalia binti Tugiman; **draft manuscript preparation:** Nur Amalia binti Tugiman, Nizamuddin bin Razali. All authors reviewed the results and approved the final version of the manuscript.*

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