International Journal of Modern Education
EISSN: 2637-0905
Volume: 8 Issue: 31 (September 2026) PP. 115-131

INTERNATIONAL JOURNAL OF MODERN EDUCATION (IJMOE)
www.gaexcellence.com/ijmoe

GENERATIVE ARTIFICIAL INTELLIGENCE (GENAI) ACCEPTANCE AMONG MALAYSIAN FOUNDATION STUDENTS: AN APPLICATION OF THE TECHNOLOGY ACCEPTANCE MODEL

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Article Info:

Article history:
Received date: 20.07.2026
Revised date: 30.07.2026
Accepted date: 20.08.2026
Published date: 07.09.2026

Abstract:

Generative artificial intelligence (GenAI) is increasingly being used in higher education to support learning, academic writing, information searching, and other academic activities. However, limited research has examined GenAI acceptance among foundation students in Malaysia. This study therefore examined the acceptance and actual use of GenAI among Malaysian foundation students using the Technology Acceptance Model. Specifically, the study investigated the relationships among Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude (ATT), Behavioural Intention (BI), and Actual Use (AU). Data were collected from 238 foundation students and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results showed that five of the six hypothesised relationships were positive and

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume: 8 Issue: 31 (September 2026) PP. 115-131

To cite this document:

Noh, N. H. M., Bakar, N. S. A., Hashim, N., Mohamed, Z., & Ahmad, A. A. (2026). Generative Artificial Intelligence (GenAI) Acceptance Among Malaysian Foundation Students: An Application of The Technology Acceptance Model. *International Journal of Modern Education, 8*(31), 115-131.

DOI: 10.35631/IJMOE.831007

statistically significant. PEOU significantly influenced PU and ATT, while PU significantly influenced ATT. ATT significantly influenced BI, and BI significantly influenced AU. However, PU did not have a significant direct effect on BI. Among the significant relationships, the effect of ATT on BI demonstrated the strongest effect, followed by BI on AU), highlighting the importance of students' attitudes and behavioural intentions in shaping their actual use of GenAI. The findings support the applicability of TAM in explaining GenAI acceptance among Malaysian foundation students. The study contributes to the limited Malaysian literature on GenAI acceptance at the foundation level and provides practical insights for educational institutions to promote the effective and responsible use of GenAI for academic purposes.

Keyword:

Actual Use, Behavioural Intention, Foundation Students, Generative Artificial Intelligence, Higher Education, Malaysia, Technology Acceptance Model

Introduction

Generative artificial intelligence (GenAI) refers to a type of artificial intelligence that can create new content based on user instructions or prompts, including text, images, audio, video, and computer code. In higher education, examples of GenAI include ChatGPT, Google Gemini, and Claude, which can generate written responses, explain concepts, answer questions, summarise information, assist with academic writing, and provide ideas for learning activities. As these tools become increasingly accessible, students are incorporating GenAI into various academic practices. As GenAI becomes increasingly accessible, its use has become more visible in higher-education environments, where students are increasingly incorporating these tools into their academic practices.

The growing use of GenAI has also attracted increasing research attention regarding students' experiences and perceptions. Chan and Hu (2023) found that higher-education students recognised various benefits of GenAI, including personalised learning support, writing assistance, brainstorming, research, and information processing. Similarly, Žáková et al. (2025) examined student and teacher perspectives on ChatGPT and highlighted its potential benefits for teaching and learning, while also identifying concerns surrounding its use. He et al. (2025) further reported substantial ChatGPT use among university students, with many students intending to continue using the technology and perceiving benefits for their learning and future careers. Blahopoulou and Ortiz-Bonnin (2025) also found that students widely used ChatGPT for academic and personal purposes and recognised benefits such as 24/7 accessibility and

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EISSN: 2637-0905
Volume: 8 Issue: 31 (September 2026) PP. 115-131

timesaving, while also expressing concerns about over-reliance and its impact on university education. The study further found that ChatGPT users were more supportive of AI integration in higher education than non-users. These findings suggest that students are increasingly engaging with GenAI and that their experiences, perceived benefits, and concerns may shape their perceptions and attitudes toward its use.

Evidence from Malaysia further indicates that students have begun to adopt GenAI and recognise its potential value in education. In a study involving UiTM students, Abd Rahim et al. (2023) explored their perceptions of ChatGPT as a tool for language learning. The findings showed that students viewed ChatGPT positively, particularly in terms of its ability to support the development of their writing skills. They also reported that using ChatGPT made learning English more interesting and engaging. These findings suggest that Malaysian students are not only familiar with GenAI tools but also recognise their usefulness in supporting different aspects of the learning process. More recent Malaysian studies have similarly reported the use of GenAI for various academic activities and highlighted the importance of perceived usefulness in students' adoption of these technologies (Yap et al., 2025). Research has also expanded beyond ChatGPT, with studies examining students' use of Google Gemini and ChatGPT for learning (Cheah & Teik Aun, 2025). Together, these findings indicate that GenAI is becoming increasingly relevant to Malaysian students' academic experiences.

However, the increasing availability and use of GenAI does not necessarily mean that students will automatically accept and continue using these technologies. Students do not necessarily perceive the usefulness and ease of using GenAI in the same way. Some students may find GenAI helpful in completing academic tasks, such as generating ideas, explaining difficult concepts, or improving their written work, while others may feel that its use requires additional effort or may not provide sufficient benefits for their studies. These different perceptions can shape how students develop their attitudes towards GenAI and may subsequently affect their willingness to use such tools and their actual use for academic purposes. A student who considers GenAI useful and easy to use may be more willing to incorporate it into regular academic activities, whereas a student who finds it less useful or difficult to use may be less inclined to do so. Therefore, examining students' perceptions of usefulness and ease of use can provide a better understanding of the factors that influence their attitudes, behavioural intentions, and actual adoption of GenAI in an educational setting. The Technology Acceptance Model (TAM) proposed by Davis (1989) provides an established framework for explaining technology acceptance through perceived usefulness, perceived ease of use, attitude, behavioural intention, and actual use.

Although TAM has increasingly been applied to GenAI, limited research has examined the original TAM among Malaysian higher-education students, particularly foundation students. In Malaysia, foundation students are typically secondary school graduates enrolled in pre-university programmes that provide a fast-track route between secondary education and undergraduate degree studies. Existing Malaysian studies have mainly focused on university students and have reported some inconsistent findings, particularly regarding the influence of perceived ease of use on students' acceptance and use of GenAI (Abd Hadi et al., 2024; Foroughi et al., 2025; Yap et al., 2025). Moreover, much of the existing research focuses on broader university populations, leaving foundation students comparatively underexplored despite their exposure to GenAI technologies at an early stage of higher education.

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Volume: 8 Issue: 31 (September 2026) PP. 115-131

Therefore, this study applies the Technology Acceptance Model (TAM) by Davis (1989) to examine the acceptance and actual use of GenAI among Malaysian foundation students. Specifically, the study examines the relationships among perceived usefulness, perceived ease of use, attitude toward using, behavioural intention to use, and actual system use. By focusing on the TAM framework, this study aims to provide a clearer understanding of how foundation students in Malaysia perceive, accept, and use GenAI for academic purposes and to contribute empirical evidence to the growing body of GenAI research in the Malaysian higher-education context.

Literature Review

Technology Acceptance Model (TAM) Generative Artificial Intelligence

The Technology Acceptance Model (TAM), introduced by Davis (1989), is one of the most established models for explaining individual acceptance of information technology. The model proposes that perceived usefulness (PU) and perceived ease of use (PEOU) are fundamental beliefs underlying users' acceptance of a technology. TAM also incorporates attitude toward using as an evaluative response to the technology and behavioural intention to use as an important predictor of technology use (Davis, 1989). Actual system use represents the behavioural outcome of technology acceptance, with behavioural intention shown to be positively associated with subsequent system usage (Davis et al., 1989).

The Technology Acceptance Model (TAM) has increasingly been applied to examine students' acceptance of generative artificial intelligence (GenAI), particularly ChatGPT. Zou and Huang (2023) examined doctoral students' acceptance of ChatGPT for academic writing and found that perceived ease of use significantly influenced perceived usefulness, while both perceived usefulness and perceived ease of use significantly influenced students' attitudes toward ChatGPT. Attitude also significantly predicted behavioural intention to use ChatGPT. However, the direct effects of perceived usefulness and perceived ease of use on behavioural intention were not significant, although both had significant indirect effects on behavioural intention through attitude.

Similarly, Liu and Ma (2024) examined EFL learners' use of ChatGPT in informal digital learning of English based on TAM. The findings showed that perceived ease of use did not significantly directly influence attitude, although it had a significant indirect effect on attitude through perceived usefulness. In addition, attitude significantly influenced behavioural intention, while behavioural intention significantly predicted actual use of ChatGPT. These findings demonstrate the relevance of TAM in explaining both students' intention to use and actual use of ChatGPT in an educational context.

TAM and Generative Artificial Intelligence in Malaysia

Malaysian research has also applied TAM to examine students' acceptance of GenAI. Foroughi et al. (2025) found that perceived usefulness, perceived ease of use, attitude, and intention to use were significantly related among Malaysian university students using ChatGPT. Abd Hadi et al. (2024) found that attitude significantly predicted behavioural intention and actual use among Malaysian ESL undergraduate students, while perceived usefulness and perceived ease of use were not significant predictors of either behavioural intention or actual use. Yap et al. (2025), examining GenAI adoption among Malaysian university students, found that perceived

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usefulness significantly influenced GenAI adoption, whereas perceived ease of use had no significant effect. These findings show that while perceived usefulness and attitude are consistently relevant, the effect of perceived ease of use is not consistent across Malaysian studies.

Hypothesis Development

Perceived Ease of Use and Perceived Usefulness

Perceived ease of use (PEOU) refers to the extent to which users perceive that a technology can be used with minimal effort, while perceived usefulness (PU) refers to the extent to which users believe that the technology can improve their task performance (Davis, 1989). According to TAM, a system that is perceived as easy to use is more likely to be perceived as useful because users can obtain its benefits without requiring substantial effort. Empirical evidence supports this relationship in the context of GenAI. Zou and Huang (2023) found that perceived ease of use significantly influenced perceived usefulness among doctoral students using ChatGPT for academic writing. Therefore, students who perceive GenAI as easy to use are more likely to perceive it as useful for their academic activities. Hence, the following hypothesis is proposed:
H1: PEOU has a significant positive effect on PU toward using GenAI.

Perceived Ease of Use and Attitude

TAM proposes that perceived ease of use can positively influence users' attitudes toward a technology because technologies that require less effort are generally more favourable to users (Davis, 1989). In the context of ChatGPT, Zou and Huang (2023) found that perceived ease of use significantly influenced students' attitudes toward ChatGPT. However, Liu and Ma (2024) reported that perceived ease of use did not have a significant direct effect on attitude, although it had a significant indirect effect through perceived usefulness. Despite this mixed empirical evidence, the theoretical relationship proposed by TAM and the significant finding reported by Zou and Huang (2023) provide a basis for further examining this relationship among Malaysian higher-education students. Therefore, the following hypothesis is proposed:
H2: PEOU has a significant positive effect on ATT toward using GenAI.

Perceived Usefulness and Attitude

Perceived usefulness (PU) represents the degree to which users believe that using a technology will enhance their performance (Davis, 1989), while attitude (ATT) refers to an individual's overall positive or negative evaluation of using a technology (Davis, 1989). In the TAM framework, greater perceived usefulness is expected to lead to a more favourable attitude toward using the technology. This relationship has also been supported in the context of ChatGPT. Zou and Huang (2023) found that perceived usefulness significantly influenced students' attitudes toward ChatGPT, while Liu and Ma (2024) similarly reported a significant relationship between perceived usefulness and attitude among EFL learners using ChatGPT. Therefore, when students perceive GenAI as beneficial for their academic activities, they are more likely to develop a positive attitude toward its use. Thus, the following hypothesis is proposed:
H3: PU has a significant positive effect on ATT toward using GenAI.

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Perceived Usefulness and Behavioural Intention

Perceived Usefulness is also expected to directly influence Behavioural Intention (BI). When students believe that GenAI can provide meaningful benefits for their academic activities, they are more likely to intend to use it. This direct relationship is an important component of TAM, as users may intend to use a technology when they perceive that it can improve their performance (Davis, 1989). Previous studies provide support for this relationship in GenAI contexts. Foroughi et al. (2025) reported significant relationships among PU, attitude, and intention to use ChatGPT among Malaysian university students. Given the theoretical proposition of TAM and the empirical evidence supporting the relevance of PU to GenAI adoption, this study proposes:
H4: PU has a significant positive effect on BI toward using GenAI.

Attitude and Behavioural Intention to Use

Attitude refers to an individual's overall positive or negative evaluation of using a technology. According to TAM, a favourable attitude toward a technology is expected to increase an individual's intention to use it (Davis, 1989). Previous research on GenAI supports this relationship. Zou and Huang (2023) found that attitude significantly predicted behavioural intention to use ChatGPT, while Liu and Ma (2024) also reported a significant positive relationship between attitude and behavioural intention among EFL learners. In the Malaysian context, Abd Hadi et al. (2024) similarly found that attitude significantly predicted students' behavioural intention to use ChatGPT. Therefore, students who develop a more positive attitude toward GenAI are expected to have a stronger intention to use it for academic purposes. Hence, the following hypothesis is proposed:
H5: ATT has a significant positive effect on BI toward using GenAI.

Behavioural Intention to Use and Actual Use

Behavioural intention refers to an individual's willingness or intention to use a technology and is considered an important predictor of actual technology use in TAM (Davis, 1989). When users have a stronger intention to use a technology, they are more likely to translate that intention into actual usage behaviour. This relationship has been supported in the context of ChatGPT. Liu and Ma (2024) found that behavioural intention significantly predicted actual use of ChatGPT among EFL learners. Similarly, Abd Hadi et al. (2024) demonstrated the relevance of behavioural intention and actual use in Malaysian students' acceptance of ChatGPT. Therefore, students who have stronger intentions to use GenAI are expected to be more likely to use it in their academic activities. Thus, the following hypothesis is proposed:
H6: BI to use has a significant positive effect on AU of GenAI.

Methodology

Sampling

Convenience sampling was employed to select participants from the Foundation Programme students at Universiti Malaysia Terengganu (UMT). According to Hair et al., (2003), convenience sampling involves selecting participants who are readily accessible and available to the researchers. This technique was adopted because the target population was accessible to the researchers, allowing data to be collected in a practical and cost-effective manner.

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To determine the minimum required sample size, G*Power 3.1 software was used to conduct an a priori power analysis (Faul et al., 2009). The analysis was conducted using a medium effect size of 0.15 (f^2), a significance level of 0.05, and a statistical power of 0.80, based on Cohen's (1988) guidelines. The analysis indicated that a minimum sample size of 107 participants was required based on 2 endogenous variables with the largest number of predictors in the proposed model. However, the study obtained a total of 238 valid responses, which exceeded the minimum required sample size. A post hoc power analysis was subsequently conducted and indicated an achieved statistical power of approximately 0.95. Therefore, the final sample size of 238 participants was considered adequate for the analysis.

Data Collection

To verify the proposed conceptual framework, this study employed an online survey administered through Google Forms to collect data. Each item was measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The survey comprised five constructs: Perceived Ease of Use, Perceived Usefulness, Attitude, Behavioural Intention and Actual Use. In total, the survey consisted of 21 items.

Measures and Instrument

A questionnaire was developed for this study, comprising a total of 25 items. The questionnaire was organized into two main sections: the first section collected students' demographic information, including gender, SPM Background, Prior Experience with GenAI Tools, Familiarity with GenAI Tools, and Frequency of GenAI Usage for Academic Purposes, while the second section measured the constructs included in the proposed conceptual framework for examining students' behavioural intention to use Generative Artificial Intelligence (GenAI) services for academic learning. The constructs included Perceived Ease of Use, Perceived Usefulness, Attitude, Behavioural Intention and Actual Use. Table 1 provides an overview of the constructs used in the study and the corresponding items used to measure each construct. The measurement items were adopted and adapted from previous studies and refined where necessary to suit the context of GenAI use for academic learning among Foundation Programme students.

Table 1: Overview of the Constructs

Construct	Item	Source
Perceived Ease of Use, PEOU	4	(Yuli Bangun et al., 2025)
Perceived Usefulness, PU	5	(Ni & Cheung, 2023)
Attitude toward use, ATT	4	(Davis et al., 1989)
Behavioural Intention, BI	4	(Yuli Bangun et al., 2025)
Actual Use, AU	4	(Biloš & Budimir, 2024)

Results

Respondants' Profile

Table 2 presents the demographic profile of the 238 students included in the final dataset. In terms of gender, 131 students (55.0%) were female, while 107 students (45.0%) were male, indicating a relatively balanced distribution, although female students constituted a slightly

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larger proportion of the sample. Regarding SPM background, most students were from STEM A, with 159 students (66.8%). This was followed by KSI, with 37 students (15.5%), STEM B, with 27 students (11.3%), and STEM C, with 15 students (6.3%). Thus, STEM A students represented the largest proportion of students in the study. Regarding prior experience with GenAI tools, most students reported having moderate experience, accounting for 148 students (62.2%). Meanwhile, 52 students (21.8%) reported minimal experience, 37 students (15.5%) reported extensive experience, and only 1 student (0.4%) reported having no prior experience with GenAI tools. In terms of familiarity with GenAI tools, 167 students (70.2%) indicated that they were moderately familiar with GenAI tools, while 59 students (24.8%) reported being very familiar. Only 12 students (5.0%) indicated that they were not at all familiar with GenAI tools. Regarding the frequency of GenAI usage for academic purposes, 147 students (61.8%) reported using GenAI tools seldom, while 91 students (38.2%) reported using GenAI tools always. Overall, the findings suggest that most students had a moderate level of familiarity with GenAI technology and some prior experience using GenAI tools. However, despite this familiarity and experience, most students reported using GenAI tools only seldom for academic purposes.

Table 2: Demographic Information

Characteristics	Category	Frequency (*n*)	Percentage (%)
Gender	Male	107	45.0
	Female	131	55.0
SPM Background	KSI	37	15.5
	STEM A	159	66.8
	STEM B	27	11.3
	STEM C	15	6.3
Prior Experience with GenAI Tools	Extensive Experience	37	15.5
	Moderate Experience	148	62.2
	Minimal Experience	52	21.8
	No Experience	1	0.4
Familiarity with GenAI Tools	Very Familiar	59	24.8
	Moderately Familiar	167	70.2
	Not at All Familiar	12	5.0
	Always	91	38.2
	Seldom	147	61.8
	Never	0	0

Partial Least Squares- Structural Equation Modelling

The research model was analysed using SmartPLS3.0 software through partial least squares (PLS) analysis (Ringle et al., 2015). The analysis followed a two-stage approach, beginning with assessment of the measurement model for reliability and validity, followed by assessment of the structural model for hypothesis testing (Anderson & Gerbing, 1988).

When predictor and criterion variables are collected using the same self-reported questionnaire, common method variance (CMV) may be a potential concern (Podsakoff et al., 2003). Harman's single-factor test was applied. The first unrotated factor accounted for 49.23% of the

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variance, which was below the 50% threshold. Therefore, CMV was not considered a major concern in this study.

Data normality was assessed via multivariate skewness and kurtosis analysis as recommended by Hair et al. (2021) and Cain et al. (2017). The Mardia's multivariate skewness ($\beta = 6.4967$, $p<0.01$) is above the cut of +1 and Mardia's multivariate kurtosis ($\beta= 55.9099$, $p<0.01$) above the cut of +20 computed showed that the data collected is not multivariate normal. Thus, the use of PLS-SEM in this analysis is justified.

Measurement Model

The reflective measurement model was assessed to determine whether the indicators adequately represented their respective constructs in terms of reliability and validity as suggested by Hair et al., (2016). This assessment examined the quality of the measurement items and their ability to consistently measure the intended constructs. Outer loadings, composite reliability (CR), and average variance extracted (AVE) were examined to assess the convergent validity and reliability of the measurement model.

The findings in Table 3 show that the outer loadings ranged from 0.734 to 0.912, with all indicators exceeding the recommended threshold of 0.708 (Hair et al., 2021). Therefore, all indicators demonstrated a sufficiently strong relationship with their respective constructs, indicating adequate convergent validity. The composite reliability (CR) and average variance extracted (AVE) were then examined to further assess the reliability and convergent validity of the constructs. Hair et al. (2021) recommended an AVE value of at least 0.50.

As shown in Table 3, the CR values ranged from 0.898 to 0.942, exceeding the recommended threshold of 0.70. Similarly, the AVE values ranged from 0.638 to 0.803, which were all above the minimum threshold of 0.50. These results indicate that all constructs demonstrated acceptable internal consistency reliability and convergent validity. The indicators within each construct therefore consistently measured their respective underlying concepts.

Overall, the results in Table 3 confirm that the measurement model achieved satisfactory internal consistency reliability and convergent validity. All outer loadings, CR values, and AVE values met the recommended criteria, indicating that the measurement items were reliable and adequately represented their respective constructs. Therefore, the measurement model was considered suitable for subsequent structural model evaluation.

Table 3: Reliability and Convergent Validity

Construct	Items	Outer Loadings	CR	AVE
PERCEIVED EASE OF USE (PEOU)	PEOU1	0.798	0.907	0.709
	PEOU2	0.816		
	PEOU3	0.861		
	PEOU4	0.800		
PERCEIVED USEFULNESS (PU)	PU1	0.830	0.898	0.638
	PU2	0.856		
	PU3	0.794		

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	PU4	0.734		
	PU5	0.776		
ATTITUDE (ATT)	ATT1	0.885	0.936	0.784
	ATT2	0.868		
	ATT3	0.902		
	ATT4	0.887		
BEHAVIOURAL INTENTION (BI)	BI1	0.892	0.942	0.803
	BI2	0.912		
	BI3	0.902		
	BI4	0.877		
ACTUAL USE (AU)	AU1	0.869	0.926	0.759
	AU2	0.892		
	AU3	0.911		
	AU4	0.810		

Discriminant validity assesses whether each construct in the model is sufficiently different from the other constructs. In this study, the Heterotrait-Monotrait (HTMT) ratio was employed to evaluate discriminant validity, as recommended by Henseler et al. (2015). An HTMT value below 0.90 indicates that the constructs are empirically distinguishable from one another. As presented in Table 4, all HTMT values were below the recommended threshold of 0.90. Therefore, the results confirm that discriminant validity was established, indicating that the constructs in the measurement model were sufficiently distinct from each other.

Table 4: Discriminant Validity

	PEOU	**PU**	**ATT**	**BI**	**AU**
PEOU					
PU	0.627				
ATT	0.509	0.667			
BI	0.553	0.577	0.829		
AU	0.478	0.632	0.795	0.786	

Structural Model

Following the assessment of the measurement model, the structural model was evaluated to examine the proposed relationships among the constructs and determine whether the hypothesised relationships were statistically significant. The assessment focused on the path coefficients (β), standard errors (SE), t-values, p-values, confidence intervals, and variance inflation factor (VIF). The significance of the hypothesised relationships was determined using the PLS bootstrapping procedure with 5,000 resamples, as recommended by Hair et al. (2021). As presented in Table 5, five of the six hypothesised relationships were statistically significant and therefore supported. PEOU significantly influenced PU ($\beta = 0.565$, $t = 12.264$, $p < 0.05$), supporting H1. PEOU also had a significant positive effect on ATT ($\beta = 0.201$, $t = 2.706$, $p < 0.05$), supporting H2. Similarly, PU significantly influenced ATT ($\beta = 0.481$, $t = 6.115$, $p < 0.05$), supporting H3. However, PU did not have a significant

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direct effect on BI (β = 0.098, t = 1.403, p > 0.05), resulting in H4 not being supported. ATT had a significant positive effect on BI (β = 0.705, t = 13.331, p < 0.05), supporting H5. Finally, BI significantly influenced AU (β = 0.718, t = 19.227, p < 0.05), supporting H6. Among the significant relationships, BI → AU demonstrated the strongest effect (β = 0.718), followed by ATT → BI (β = 0.705) and PEOU → PU (β = 0.565). These findings indicate that students' behavioural intention is strongly associated with their actual use of GenAI, while their attitude also plays an important role in shaping their intention to use the technology.

Multicollinearity was assessed using the variance inflation factor (VIF). Hair et al. (2021) suggest that VIF values below 5 indicate that collinearity is not a critical concern in the structural model. As shown in Table 5, the VIF values ranged from 1.000 to 1.546, with all values substantially below the recommended threshold of 5. Therefore, the results indicate that multicollinearity was not a concern among the predictor constructs in the structural model.

Table 5: Path Coefficient and Hypothesis Testing

	Beta	SE	T Values	P Values	LL	UL	VIF	DECISION
PEOU → PU	0.565	0.046	12.264	0	0.47	0.648	1	Supported
PEOU → ATT	0.201	0.074	2.706	0.007	0.058	0.35	1.469	Supported
PU → ATT	0.481	0.079	6.115	0	0.319	0.632	1.469	Supported
PU → BI	0.098	0.07	1.403	0.161	-0.046	0.228	1.546	Not Supported
ATT → BI	0.705	0.053	13.331	0	0.601	0.807	1.546	Supported
BI → AU	0.718	0.037	19.227	0	0.641	0.786	1	Supported

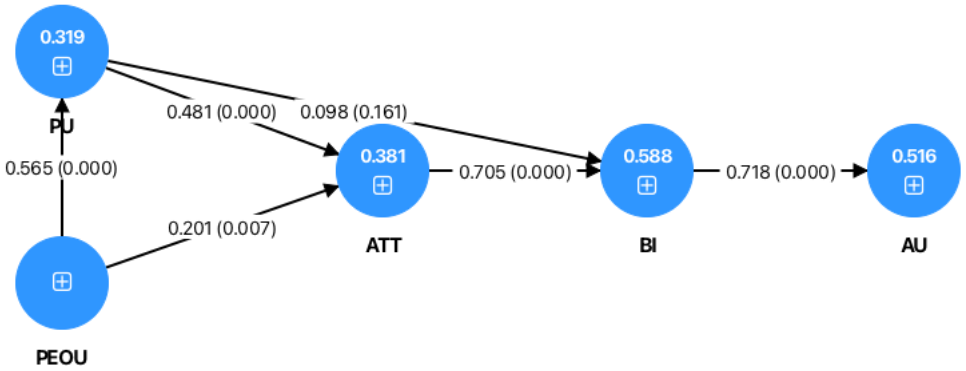

Figure 1. Structural Model

The structural model was first evaluated using the R^2 values to determine how well the model explains the endogenous constructs. Following Chin (1998), R^2 values of 0.67, 0.33, and 0.19 indicate substantial, moderate, and weak predictive accuracy, respectively. The results in Table 6 show an R^2 of 0.319 for PU, which indicates weak predictive accuracy. In comparison, ATT (R^2 = 0.381), BI (R^2 = 0.582), and AU (R^2 = 0.516) reached the moderate level.

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The f^2 values were then examined to determine the extent to which each predictor contributes to its respective endogenous construct. Cohen (1988), classifies values of 0.02, 0.15, and 0.35 as small, medium, and large effects. PEOU → PU had a large effect ($f^2 = 0.469$), whereas PEOU → ATT had a small effect ($f^2 = 0.045$). PU → ATT showed a medium effect ($f^2 = 0.254$), while PU → BI had a negligible effect ($f^2 = 0.015$). Large effects were observed for ATT → BI ($f^2 = 0.779$) and BI → AU ($f^2 = 1.065$). Among the relationships examined, BI → AU had the largest effect, followed by ATT → BI and PEOU → PU.

The Q^2 value was used to assess the predictive relevance of the structural model. Hair et al. (2021), indicate that a Q^2 value above zero demonstrates predictive relevance. Table 6 shows positive Q^2 values for PU (0.312), ATT (0.215), BI (0.239), and AU (0.312). Thus, the model demonstrates predictive relevance for all four endogenous constructs.

Table 6: R2 and Effect Size

	R^2	Q^2	f^2			
			PU	**ATT**	**BI**	**AU**
PEOU			0.469	0.045		
PU	0.319	0.312		0.254	0.015	
ATT	0.381	0.215			0.779	
BI	0.582	0.239				1.065
AU	0.516	0.312				

Discussion

This study examined the acceptance and actual use of generative artificial intelligence (GenAI) among foundation students in Malaysia using the Technology Acceptance Model (TAM) (Davis, 1989). The study focused on the relationships between Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude (ATT), Behavioural Intention (BI), and Actual Use (AU), particularly how students' perceptions of GenAI relate to their intention and actual use for academic purposes. Overall, the findings support the use of TAM to explain GenAI acceptance among foundation students in the Malaysian higher-education context.

PEOU had a positive and significant effect on PU, consistent with Zou and Huang (2023). In other words, students who found GenAI easier to use were also more likely to see it as useful for their academic work. One possible reason is their existing exposure to GenAI. About 62.2% of the students reported moderate prior experience, while 70.2% reported moderate familiarity with GenAI tools. In terms of academic use, 38.2% reported always using GenAI, whereas 61.8% reported using it seldom. This level of exposure may have made students more comfortable using GenAI and, in turn, more aware of its usefulness. A similar context can be seen in Abd Rahim et al. (2023), where Malaysian university students viewed ChatGPT as helpful, particularly for improving their writing.

Furthermore, PEOU also had a positive and significant effect on ATT, consistent with Zou and Huang (2023). However, its effect was relatively small, suggesting that ease of use was relevant but was not a major factor shaping students' attitudes. This could be related to the students' familiarity with GenAI, as 70.2% reported moderate familiarity and another 24.8% reported high familiarity. For students who are already comfortable with these tools, ease of use may simply be something they expect rather than a factor that strongly changes their attitude. Their

overall evaluation may instead depend more on what GenAI can actually offer them. Chan and Hu (2023), for example, reported that students valued GenAI for learning support, writing, brainstorming, research, and information processing. Nevertheless, the result differs from Liu and Ma (2024), who found that PEOU did not have a significant direct effect on attitude. This difference suggests that the role of ease of use may depend on the characteristics of the students and how they use GenAI.

Moreover, PU had a positive and significant effect on ATT, consistent with Zou and Huang (2023). Students who considered GenAI useful for their academic work were more likely to have a favourable attitude toward it. Their previous experience with GenAI may partly explain this result. The fact that 38.2% reported always using GenAI and 61.8% reported seldom using it suggests that most students had at least some experience with the technology. Through this experience, students may have had opportunities to recognise its practical benefits. This is broadly consistent with Chan and Hu (2023), who found that students appreciated GenAI for activities such as learning, writing, brainstorming, research, and analysis.

In contrast, PU did not significantly influence BI, suggesting that seeing GenAI as useful does not necessarily lead students to intend to use it. This result is consistent with Zou and Huang (2023), who also found no significant direct relationship between PU and behavioural intention, although PU influenced intention indirectly through attitude. However, our finding differs from Foroughi et al. (2025), who reported significant relationships involving PU and intention to use ChatGPT among Malaysian university students. The difference could be related to the different student groups and contexts in which GenAI was examined. In the present study, PU significantly influenced ATT, while ATT had a much stronger relationship with BI. This suggests that students may first form an overall view of GenAI before its usefulness translates into an intention to use it. Blahopoulou and Ortiz-Bonnin (2025) reported that students recognised benefits such as saving time and easy access, but they also raised concerns about over-reliance and the effects of ChatGPT on university education. Thus, students' decisions may depend on their overall evaluation of GenAI rather than its usefulness alone.

In addition, ATT had a positive and significant effect on BI. This indicates that students with more favourable attitudes toward GenAI are substantially more likely to intend to use it. The finding is consistent with Zou and Huang (2023), Liu and Ma (2024), and Abd Hadi et al. (2024), all of whom reported a significant relationship between attitude and behavioural intention in ChatGPT-related contexts. The positive relationship may also be understood considering the students' existing exposure to AI, as 38.2% always and 61.8% seldom used GenAI for academic purposes, suggesting that many students already had experience forming opinions about its usefulness and role in their studies. Furthermore, this relationship may be explained by students' positive experiences with GenAI. Žáková et al. (2025) found that students' perceptions of ChatGPT were shaped by their experiences with its usefulness for learning, satisfaction, and trust, as well as their willingness to use it in the future.

Furthermore, had a positive and significant effect on AU and represented the strongest relationship in the model ($\beta = 0.718$), supporting the findings of Liu and Ma (2024). This indicates that students with stronger intentions to use GenAI are considerably more likely to use it in their actual academic activities. This relationship may be strengthened when students perceive GenAI as beneficial and already have opportunities to incorporate it into their learning. He et al. (2025), in a survey of university students, reported substantial ChatGPT use alongside a high intention to continue using it, while students also perceived positive

contributions to their learning and career development. In this study, the high level of reported AI usage, with 38.2% always and 61.8% seldom using AI for academic purposes, further indicates that students already had opportunities to translate their intentions into actual academic use.

Conclusion

This study shows that the Technology Acceptance Model (TAM) can be used to explain GenAI acceptance among Malaysian foundation students. Five out of the six hypothesised relationships were statistically significant. Among them, BI → AU had the highest path coefficient (β = 0.718), followed by ATT → BI (β = 0.705) and PEOU → PU (β = 0.565). On the other hand, PU did not have a significant direct effect on BI (β = 0.098). The results suggest that students' attitudes toward GenAI and their intention to use it are important in turning their perceptions of the technology into actual academic use. The study also adds to the relatively limited research on GenAI acceptance among Malaysian foundation students. As foundation students are at an early stage of higher education, GenAI may be useful to them in several ways, including helping them understand difficult concepts, generate ideas, improve academic writing, and support independent learning. Taken together, the findings suggest that the traditional TAM still provides a useful way of understanding GenAI acceptance in the Malaysian foundation context. They also give educational institutions a clearer basis for helping foundation students use GenAI effectively and responsibly for their academic work.

Recommendation

Based on the findings, several recommendations can be made for Malaysian foundation programmes. First, institutions could provide students with clearer guidance on how GenAI should be used. Since Attitude → Behavioural Intention showed a strong relationship (β = 0.705), workshops and learning activities could help students form a more positive and informed view of GenAI and understand how tools such as ChatGPT and Gemini can be used to support their studies. Second, educators should show students the practical benefits of GenAI while also encouraging them to evaluate its responses critically. Although PU significantly influenced Attitude, it did not directly influence Behavioural Intention (β = 0.098, p = 0.161). This means that knowing that GenAI is useful may not, by itself, be enough to encourage students to use it. Educators could therefore include practical activities where students use GenAI to understand difficult concepts, generate ideas, summarise information, and improve academic writing. At the same time, students should be encouraged to consider its limitations, check the accuracy of its responses, and understand when its use is appropriate. Such activities may help students develop a more positive attitude towards GenAI and, in turn, strengthen their intention to use it. Third, universities should provide clear guidelines for responsible GenAI use. Since Behavioural Intention strongly influenced Actual Use (β = 0.718), students need clear guidance on academic integrity, plagiarism, appropriate AI assistance, checking information, and disclosing AI use where required. This would help students use GenAI as a learning aid without allowing it to replace their own academic work. Finally, future research could look further into GenAI acceptance among Malaysian foundation students because this group has received relatively little attention. Studies involving students from different institutions and programmes could provide a wider picture of GenAI acceptance. Researchers could also examine factors such as AI literacy, trust, ethical concerns, and perceived risks. These factors may provide further insight into why students may recognise the usefulness of GenAI but still hesitate to develop a direct intention to use it.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume: 8 Issue: 31 (September 2026) PP. 115-131

Acknowledgements: The authors would like to offer their profound gratitude to Universiti Teknologi MARA and Universiti Malaysia Terengganu, which has provided the requisite resources and support during the course of this research. The contribution of colleagues and peers who shared their valuable input and positive feedback is highly appreciated, and it improved the quality of this paper to a great extent.

Funding Statement: No Funding

Conflict of Interest Statement: This study was conducted in accordance with ethical research standards. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

Ethics Statement: This study was conducted in accordance with ethical research standards. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. Nur Hidayah Md Noh was responsible for the conceptualization, methodology, and overall supervision of the study. Nurul Syahida Abu Bakar and Aimi Athirah Ahmad handled data collection, analysis, and interpretation of results. Nooryuhanis binti Hashim and Zamzulani binti Mohamed contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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IJMOE
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