e-ISSN: 2289-5337

Journal of Information and Knowledge Management (2024) Vol. 14, No. 2

Assessing the Acceptance and Behavioral Intentions Towards ChatGPT among Undergraduate Students

Mohammad Fazli Baharuddin¹*, Nur Diyanah Ahmad Zaki², Khairun Nizam Mohammad Yusuff³, Muhammad Asyraf Wahi Anuar⁴

^{1,2,4}College of Computing, Informatics and Mathematics, UiTM Selangor Branch, Puncak Perdana Campus, 40150 Shah Alam, Selangor, Malaysia

³Faculty of Communication and Media Studies, UiTM Shah Alam, 40450 Shah Alam, Selangor, Malaysia

ARTICLE INFO

Article history: Received 1 July 2024 Revised 15 August 2024 Accepted 1 September 2024 Online first Published 1 October 2024

Keywords: ChatGPT UTAUT model TAM model artificial intelligence information management

ABSTRACT

The application of artificial intelligence (AI) in education will grow in the future as technology advances. By looking for a new research setting, the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions and behavioural intention towards ChatGPT of selected undergraduate students in Malaysia is the central theme for this study. This study was conducted throughout Malaysia with a total of 218 valid questionnaires were obtained from selected undergraduate student in Malaysia. Findings of the study show that relationship between performance expectancy, effort expectancy, social influence, facilitating conditions and behavioural intention towards ChatGPT are significant. This research can be extended by more investigations and analysis of the many variables, as well as exploring other potential areas of inquiry.

INTRODUCTION

In the decades since its inception, artificial intelligence (AI) has been met with varying degrees of enthusiasm and disillusionment regarding its contributions to science, technology, and society (Shadbolt, 2022). According to Lau, (2002) wherever AI is being used more and more, Malaysia also supports the advancement of AI through strategic partnerships like the one between the Ministry of Science, Technology, and Innovation (MOSTI). That is the expectation that will happen in the future, the impact of the rapid development of artificial intelligence (AI) technology in the world including Malaysia. Artificial intelligence (AI) approaches are being utilised to rewrite words and improve accessibility and inclusiveness in education through text summarization, real-time captioning, machine translation, and pre-built libraries of idioms and phrases (Jarrah et al., 2023). Artificial intelligence technology has the potential to revolutionize how students learn and educators teach in Malaysia. According to Chen et al. (2020), the integration of AI into education has created new opportunities by removing physical obstacles and allowing online access to learning materials.

^{1*} Corresponding author. *E-mail address*: fazli811@uitm.edu.my

Thus, ChatGPT, an AI tool, can improve efficiency and accuracy while providing students with more opportunities to showcase their abilities (Chen et al., 2020). In the field of education, ChatGPT can be used to improve individualised learning experiences by responding to student questions and providing instructional resources (Kasneci et al., 2023). It can also be used to generate content, helping users create written pieces such as stories, articles, and code segments. Students in higher education must distinguish between AI's helpful role and its propensity to facilitate cheating (Jarrah et al., 2023). Though users should recognise ChatGPT as a tool rather than a substitute for their own creative process and use it as a springboard for their own ideas while incorporating their distinct perspectives and experiences, its impact on creativity is complex (Dwivedi et al., 2023). According to Dwivedi et al. (2023) one possible misuse of ChatGPT for plagiarism is when it generates text that resembles existing works without proper acknowledgment, allowing users to present others' work as their own, compromising the ideals of originality and intellectual property.

Looking at the new setting, the objective of this study is to unravel the determinants impacting students' behavioural intention in utilization of ChatGPT within their academic pursuits. This study in particular, focuses on individual level. It provided different perspectives on the acceptance and behavioural intention to use ChatGPT among selected undergraduate students in Malaysia.

LITERATURE REVIEW

Emergence of Artificial Intelligence

The world of technology is growing rapidly, and one of the most exciting innovations that has revolutionised the way we live is artificial intelligence, or AI. This technology has become an important pillar in various fields, having a major impact on the way we work, interact, and make decisions. Several industries have been interested in artificial intelligence (AI) from its "birth" during the 1956 Dartmouth Conference (Pedro et al., 2019). John McCarthy, who introduced the word in 1956, described artificial intelligence as "the engineering and scientific method of making intelligent machines" (Toosi et al., 2021). Artificial Intelligence is one of the most divisive technology advancements in recent history. The main areas of intelligence that have been the subject of AI research include learning, reasoning, problem solving, perception, and language use. Artificial intelligence (AI) occurs in two characteristics: data-driven AI via machine learning and expertise-based AI, which is predicated on an explicit depiction of domain expertise that a computer can reason about. The majority of artificial intelligence's current success may be linked to advancements in data-driven AI. According to Pedro et al. (2019), only a few years after artificial intelligence (AI) was first introduced, in 1959, Arthur Samuel first used the phrase "machine learning," characterising it as "the ability to learn without being explicitly programmed." Fundamentally, machine learning is just a method of achieving artificial intelligence.

As underlined by Abdulmunem. (2023), "AI may accomplish two things: (1) it can automate repetitive tasks by predicting the results of data that humans have labelled; and (2) it can improve human decision-making by feeding problems to algorithms that humans have developed." Artificial intelligence (AI), as defined by Nabiyev et al. (2013), is the capacity of a computer-controlled equipment to carry out tasks in a way that is similar to the abilities of a human. In Malaysia, the National Transformation Programme (NTP), which includes the urban services sector, illustrates the government's efforts to enhance the delivery system that it can be implemented directly into society (Samsurijan and Ebekozien, 2023). During 1957 to 1970, there was little literature or study on AI and its impact on urban services (Sa'at et al., 2017).

In the years after independence, artificial intelligence was primarily utilised in telecommunications devices that linked different districts (Sa'at et al., 2017). Application of AI may have a strategic and important impact; studies comparing the government's estimate with the neural network forecasting approach at the national level indicate the effectiveness of AI adoption in GDP prediction. According to Kok and Siripipatthanakul. (2023), by the end of 2030, the National Industrial Revolution 4.0 (4IR) Policy is expected to boost the nation's output by 30% across all sectors, with AI playing a significant part in achieving that goal. Additionally, the advancement of international digital technology has an impact on Malaysia's use of AI in urban services (Samsurijan and Ebekozien, 2023).

The rapidly developing field of artificial intelligence has the ability to completely transform our social connections. According to Goksel and Bozkurt. (2023), AI is increasingly being used in education to create innovative teaching and learning strategies that are currently being evaluated in various settings. Artificial intelligence (AI) is being used more in the education sector; this extends beyond the conventional view of AI as a supercomputer to encompass embedded computer structures (Chen et al., 2020). The new AI development strategy was released by China in 2017, with "intelligent education" as the development goal. Although vocational education is developed through thinking, content, method, talent development, and professional building, the development of artificial intelligence strategy is therefore a structural transformation (Wang, 2021).

The use of artificial intelligence in education has had a significant impact, leading to increased effectiveness and efficiency in education administration as well as global learning, personalised and customised learning, enhanced material, and general improved efficiency (Timms, 2016). Students get a general overview of the AI + education paradigm through looking at the applications of AI in education and the difficulties that AI technology confronts in education (Hamid and Chhabra, 2022). The application of artificial intelligence (AI) in education will grow in the future as the technology advances. Additionally, enhance the way that teachers and students engage with and apply AI technology in the classroom, as well as help students develop more diverse and personalised learning styles.

Chatbot, ChatGPT and Education

The first chatbot that resembled a human being was called ELIZA, developed in 1966 by Joseph Weizenbaum at MIT. In order to produce relevant results, ELIZA would first detect the keywords in an input sentence and then match those keywords against a pre-programmed set of rules (Cahn, 2017). Chatbots are artificial intelligence (AI) programmes that simulate human speech. It is intended to serve as the ultimate virtual assistant for entertainment purposes, assisting users with activities such as listening to their favourite music, answering queries, obtaining driving directions, and adjusting the thermostat in smart homes, among other things (Ranoliya et al., 2017). Furthermore, with the advent of technologies like Apple Siri, Google Assistant, and Amazon Alexa, which are included with elegant consumer goods like smartphones and smart speakers for the house, talking to a robot or computer has practically become the standard these days. Since chatbots are capable of handling several users at once and lower customer care costs, they are currently becoming increasingly popular in business groups.

However, in order to complete a lot of jobs, chatbot efficiency must be maximised. A chatbot is a growing trend that improves consumer satisfaction at a minimal cost, thereby increasing business efficacy. Rahman et al. (2018) stated, developing a basic chatbot is not as difficult as creating a complicated one, although developers still need to take high-level human language purpose into account as well as reliability, scalability, and adaptability concerns. Furthermore, the chatbot ecosystem is expanding quickly, and new features are constantly being added to the current platform. Machine learning techniques have advanced recently, and they might be able to accurately handle complicated conversational issues such transactions.

ChatGPT is an artificial intelligence (AI) chatbot developed by OpenAI, a non-profit established in 2015 with funding from Khosla Ventures and Microsoft, Reid Hoffman's charity foundation (Taecharungroj, 2023). According to Firat, (2023), ChatGPT has potential as an open education tool since it can help autodidactic students become more flexible and efficient while fostering self-directed learning and adaptability. For those pursuing self-directed learning, ChatGPT could increase motivation and engagement through providing personalised coaching, mentoring, and assessment. It is also a useful tool for real-world scenarios in academic and educational settings, as well as in a variety of other contexts, due to its use of transfer learning and reinforcement learning (Jiao et al., 2022). Shi et al. (2023) believes that ChatGPT is among the greatest AI tools available to the general public. Additionally, supports this belief because it is capable of producing text that resembles that of a person. However, according to Alafnan et al. (2023), ChatGPT adoption could have an impact on the market for knowledge works. According to a statement made by García-peñalvo, (2023), using ChatGPT could have an impact on decision-making since users could utilise the programme to generate automatic responses.

Artificial intelligence technology is revolutionising education today by simplifying educational operations and improving the efficiency of educators (Wogu et al., 2019). Since the beginning, educators have expressed both excitement and concern about the ChatGPT chatbot. The program's ability to perform tasks such as composing articles, answering complex questions, translating languages with near-perfect accuracy, solving mathematical formulas in the sciences, producing programming code, and combining books has prompted academics to share their predictions about its potential capabilities and consequences (Jiao et al., 2022).

According to Colace et al. (2018), technology can enhance student involvement and interaction by allowing for group projects and assignments, similar to what teachers often provide. The bot for e-learning can be a useful broadcast tool for subjects that are not covered in textbooks. Without spoken lessons, it provides students with a text they can consult. This method makes high-quality educational materials and resources more widely available, lowering the cost of education and increasing its accessibility. According to Subramani et al. (2023), ChatGPT has the potential to be an effective teaching tool for medical physiology in particular.

THEORETICAL FRAMEWORK

Fig. 1 shows the theoretical framework of the study. Performance expectancy, effort expectancy, social influence, and facilitating conditions is the independent variable while behavioural intention to use ChatGPT is the dependent variable.

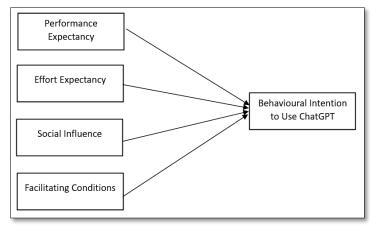


Fig. 1. Theoretical framework (Huang et.al., 2023; Venkatesh et al., 2021).

According to Huang et al. (2023), a person's intention to use technology is referred to as their behavioural intention (BI). Furthermore, the UTAUT suggests that users' behavioural intentions are moderated by factors such as age, gender, and prior technology experience. As ChatGPT's influence on educational learning and research outcomes grows, it is vital to evaluate undergraduate students' perspectives and behaviours regarding ChatGPT use.

Performance expectancy is the extent to which an individual believes that by utilising the system, their job performance would improve (Alazzam and Basari, 2015). Individuals' behavioural intention to accept new technology is influenced by performance expectancy (PE). It describes the degree to which people think that utilising a system will improve their performance in learning processes or assist them achieve gains in job performance (Venkatesh et al., 2021), PE in this study relates to the extent to which undergraduate students believe that ChatGPT can improve their productivity or academic performance.

According to Venkatesh et al. (2021) effort expectancy (EE) is defined as the degree of ease or effort associated with the use of technology. Constructs such perceived ease of use, complexity, and ease of use are all part of effort expectancy. Students' effort expectations are a measure of how simple they think it is to use ChatGPT for educational objectives. Research studies have demonstrated that effort expectancy plays a crucial role in predicting the adoption of technology and directly influences individual "behavioural intention" to use it. In this study, effort expectancy represents the students' perception that using ChatGPT is straightforward and involves minimal effort.

Venkatesh et al. (2021) defines social influence (SI) as the degree to which significant others, including family and friends, think that a person should utilise a specific technology. Research has demonstrated that the influence of social circles, such as friends, family, and lecturers positively affect users' intention to use technology. Researchers measured students' beliefs about the strength of people whose opinions students value believing that they should use ChatGPT in their studies using the concept of social influence. According to this study, students' perceptions of the extent to their lecture, or peers, encourage or support them in using ChatGPT are indicated by their social influence results.

In the context of education, "facilitating conditions" refers to the availability of guidelines, help with technical issues, and compatibility between new technology and other tools that users use. Since access to dependable and technical infrastructure, information, training, and support is crucial in university education settings, facilitating conditions emphasizes this element. This might have an effect on students' motivation to use the educational system. In this study, facilitating conditions refers to the extent to which students believe they are able to utilize the AI tool despite its widespread use, as well as their ability to get technical support and ChatGPT training. To this effect the following hypotheses are established:

H1: There is an association between performance expectancy and students' behavioural intention to use ChatGPT.

- H2: There is an association between effort expectancy and students' behavioural intention to use ChatGPT.
- H3: There is an association between social influence and students' behavioural intention to use ChatGPT.
- H4: There is an association between facilitating conditions and students' behavioural intention to use ChatGPT.

METHODOLOGY

Within the study, the researcher adopted survey as the research methodology as it may generate consistent answers from the respondents. The researchers used convenience sampling, a method of nonprobability sampling for the collection of population samples. Convenience sampling is most often used during the exploratory phase of a research and perhaps is one of the most suitable methods of getting information quickly and efficiently (Sekaran & Bougie, 2020). Furthermore, Ali and Buang (2016) stated that when the objective of a study is to test proposed theoretical assumptions and not for population generalization, a non-probability sampling is considered most appropriate. In order to satisfy the requirements of the study's theoretical framework, a series of questionnaires was created using data from earlier research. A structured questionnaire is used in a sampling survey to assess respondents' opinions and beliefs (Rahi, 2017). Data gathered through the use of a structured questionnaire may include an accounting of a certain population or subset. There are four or more question items for each dimension in the study framework, which correspond to those dimensions. A response indication that enables the respondent to display their responses according to the scale on each questionnaire is also included. The questionnaire is composed in a single language, written in English. The questions are organised under six sections: Demographic information, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Behavioural Intention to Use ChatGPT. The survey questionnaires will be sent out electronically or online through Google Form. Likert-type scales are frequently used in survey questionnaires to evaluate respondents' observations and sentiments. All other measures employed the five Likert scale levels: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree. In the context of this study, the target population was selected undergraduate students in Malaysian. The target sample size for this study had been narrowed down to selected undergraduate students in Malaysian. PLS-SEM was mainly used as a platform to analyse data in this study.

FINDINGS

Demographic Profile

Out of 218 respondents, 60 (27.5%) of the respondents are male students and 158 (72.5%) are female students. The most dominant age of the respondents was between 18–25 years old (74.8%), followed by 26–35 years old (16.5%), and 36–45 years old (7.8%). Meanwhile, above 45 years old was 0.9% only. Students with fulltime mode (72.5%) represented the highest number recorded, followed by part time mode (16.1%) and flexible mode (7.8%). Meanwhile, only 3.7% of students with others mode answered the questionnaire. Most of the respondents' level bachelor's degree (65.6%), followed by Diploma (25.2%), and Master (8.3%). The lowest number of participants in the study level is the PhD level (0.9%). the highest number of respondents was in semester 1 (39%), followed by semester 4 (17.4%), semester 3 (15.1%), semester 5 (12.8%) and semester 6 (11%). The lowest numbers of the respondents were in semester 2 (4.1%).

Measurement Model Assessment

Table 1 presents the results received by estimating the measurement model. The model contains five constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC) and Behavioural Intension (BI). Models developed in the study was assessed for validity using PLS algorithm through

the SmartPLS software using the data collected from the selected undergraduate students in Malaysia. As the study used SmartPLS to analyse statistical data, it is recommended by previous scholars to assess the convergent validity and discriminant validity (Gefen and Straub, 2005). The convergent validity, also known as average variance, extracted (AVE) is a method used to measure the measurement values between constructs (Hair et al. 2017). The individual indicators should reflect construct converging in comparison with other constructs. In order to achieve sufficient convergent validity, the value of AVE should be ≥ 0.50 . Hair et al. (2017) and Ramayah et al. (2018) suggested to remove the reflective indicator when the outer loading is < 0.40 and retain it when the outer loading is > 0.70.

	Items	Loading	Composite reliabil- ity (rho_c)	Average vari- ance extracted (AVE)
Behavioural Intention (BI)	BI1	0.903	0.943	0.768
	BI2	0.906		
	BI3	0.831		
	BI4	0.898		
	BI5	0.841		
Effort Expectancy (EE)	EE1	0.846	0.920	0.696
	EE2	0.870		
	EE3	0.824		
	EE4	0.812		
	EE5	0.818		
Facilitating Conditions	FC1	0.803	0.909	0.666
(FC)	FC2	0.824		
	FC3	0.813		
	FC4	0.850		
	FC5	0.791		
Performance Expectancy	PE1	0.839	0.919	0.695
(PE)	PE2	0.838		
	PE3	0.857		
	PE4	0.834		
	PE5	0.798		
Social Influence (SI)	SI1	0.780	0.881	0.599
	SI2	0.786		
	SI3	0.831		
	SI4	0.686		
	SI5	0.779		

From the analysis of the scores loading, all items satisfactory CR values (0.881 to 0.943) and above AVE threshold values (0.599 to 0.768). This table exhibits the measurement model that signifies the loading end of the indicators for each construct. Fig. 2 shows the measurement model of SmartPLS output for this study.

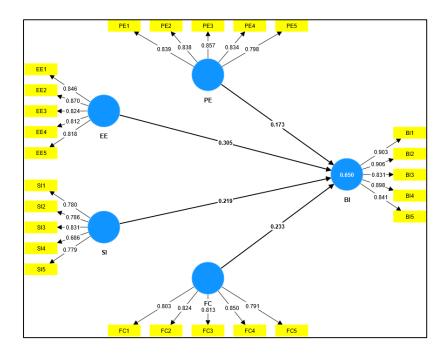


Fig. 2. Measurement Model of The SmartPLS Output

Structure Model Assessment

In a structural model assessment, it starts with the examination of structural model for collinearity issues. Ramayah et al. (2018) suggested that ensuring no lateral collinearity issues in structural model is a critical process prior to structural model evaluation. At this stage, the variance inflation factor (VIF) values of all sets of predictor constructs in the model must be examined. In this context, it is important to ensure that the value of VIF must be at a suggested value of VIF < 5.0 (Hair et al., 2011) or VIF < 3.3 (Diamantopoulos and Siguaw, 2006). Results of this procedure showed that all the inner VIF values for the other independent variables that needed to be examined for lateral multi-collinearity were less than 5, indicating that lateral multi-collinearity was not an issue for this study (Hair et al., 2014). To analyse the significance and relevance of relationship in the structural model, Ramayah et al. (2018) and Hair et al. (2014) suggested to perform bootstrapping. The number of sub-samples suggested is 500 (Hair et al., 2014). The results of the structural model analysis are shown in Table 2. The results have clearly demonstrated that all hypotheses are supported.

Finding of the study shows that relationship between Performance Expectancy and Behavioural Intension is significant, t-value and P-value is (t=2.862, p=0.002); relationship between Effort Expectancy and Behavioural Intension is significant, t-value and P-value is (t=2.861, p=0.002); relationship between Social Influence and Behavioural Intension is significant, t-value and P-value is (t=2.357, p=0.009); and relationship between Facilitating Conditions and Behavioural Intension is significant, t-value and P-value is (t=2.357, p=0.009); and relationship between Facilitating Conditions and Behavioural Intension is significant, t-value and P-value is (t=3.962, p=0.000). There are several rules of thumb regarding the value of acceptable R². According to Hair et al. (2014), 0.75 is described as substantial, 0.50 as moderate, and 0.25 as weak. A different rule was suggested by Chine, (1998) whereby 0.67 is described as substantial, 0.33 as moderate, and 0.19 as weak. Cohen, (1988) also recommended a different value of R², where 0.26, 0.13, and 0.02 are described as substantial, moderate, and weak respectively. The R² value suggested by Cohen was chosen due to the substantial value for the level of predictive accuracy. Even though the value of R² by Cohen, (1988) is lower, it is sufficient enough because the recommended R² value should be greater than 0.10 (Falk and Miller, 1992).

The objective of (f^2) assessment is to identify the level of effect size of predator constructs on an endogenous construct (Cohen, 1988; Ramayah et al. 2018). As recommend by Cohen, (1988), the recommended (f^2) values, 0.35, 0.15, and 0.02 are interpreted as large, medium, and small with regard to the level of effect size. According to Stone, (1974), Hair et al. (2017), and Geisser, (1974), endogenous constructs have fully predictive relevance by exogenous constructs when Q^2 value is larger than 0, the predictive relevance Q^2 for BI is 0.492. The result of

the Q^2 value was considered above zero and can be concluded that the model had predictive relevance based on BI (endogenous construct).

	Original	Sample	Standard	Т	P values	VIF	f ²	R ²	Q ²
	sample (O)	mean (M)	deviation	Values					
			(STDEV)						
H1: PE > BI	0.219	0.226	0.077	2.862	0.002	2.482	0.035	0.650	0.492
H2: EE > BI	0.173	0.176	0.061	2.861	0.002	3.725	0.071		
H3: SI > BI	0.233	0.230	0.099	2.357	0.009	1.752	0.078		
H4: FC > BI	0.305	0.300	0.077	3.962	0.000	2.923	0.053		

Table 2 Results of path analysis, VIF, f2, R2 and Q2

DISCUSSION

To examine the effect of performance expectancy, effort expectancy, social influence and facilitating conditions on behavioural intention to use ChatGPT among selected undergraduate students. The findings of the study have evidently confirmed that performance expectancy, has helped students to attain gains in educational performance, useful for educational purposes, has enabled students to acquire academic knowledge, enables students to accomplish their learning tasks, and students find using ChatGPT is useful to unleash their creativity. The significance of performance expectancy and behavioural intention was shown in the results (t=2.861, p=0.002). The high value in the latent score indicates higher prediction in terms of the significance towards the predicted construct. Important-Performance Map Analysis (IPMA) results for behavioural intention (BI) for this study show that Performance Expectancy has the highest value in Performance (74.607) while the Importance value is the lowest (0.173).

Apart from the above, this study hypothesised that behavioural intention to use ChatGPT is significantly influenced by effort expectancy. The findings of the study have evidently confirmed that effort expectancy, has been easy to use ChatGPT for studies, students have felt relaxed and productive when using ChatGPT for studies due to its ease of use, students also save time in completing tasks when using ChatGPT and learning to operate ChatGPT is easy for them. The significance of effort expectancy and behavioural intention was shown in the results (t=2.861, p=0.002). The high value in the latent score indicates higher prediction in terms of the significance towards the predicted construct. Important-Performance Map Analysis (IPMA) results for behavioural intention (BI) for this study show that effort expectancy has the value in Performance (73.988) while the Importance value is the highest (0.305).

Based on the theoretical framework developed, this study hypothesised that behavioural intention to use ChatGPT is significantly influenced by social influence. The findings of the study have evidently confirmed that social influence such as other students who influence their behaviour believe that they should use ChatGPT, their family believe that they should use ChatGPT, lecturers in their classes believe they should use ChatGPT, they use ChatGPT because of their classmates also use it and in general, the university has supported the use ChatGPT. The significance of performance expectancy and behavioural intention was shown in the results (t=2.357, p=0.009). The high value in the latent score indicates higher prediction in terms of the significance towards the predicted construct. Important-Performance Map Analysis (IPMA) results for behavioural intention (BI) for this study show that social influence has the lowest value in Performance (54.596) while the Importance value is (0.219).

Apart from the above, this study hypothesised that behavioural intention to use ChatGPT is significantly influenced by facilitating conditions. The findings of the study have evidently confirmed that facilitating conditions for students have the resource and knowledge necessary to use ChatGPT, ChatGPT is compatible with other AI tools they use, by using ChatGPT fits well with the way they like to work, and they have information resources that help them to learn about ChatGPT. The significance of facilitating conditions and behavioural intention was shown in the results (t=3.962, p=0.000). The high value in the latent score indicates higher prediction in terms of the significance towards the predicted construct. Important-Performance Map Analysis (IPMA) results for behavioural intention (BI) for this study show that facilitating conditions has the value in Performance (69.166) while the Importance value is (0.23).

CONCLUSION

By looking for a new research setting, the relationship between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Behavioural Intention of selected undergraduate students in Malaysia is the central theme for this study. In the meantime, the theme-related discussions have been thoroughly documented to help in understanding the topic. With that, two main objectives derived, i. to examine the level of behavioural intention to use ChatGPT among selected undergraduate students: ii. to examine the effect of performance expectancy, effort expectancy, social influence and facilitating conditions on behavioural intention to use ChatGPT among selected undergraduate students. As can be seen, a quantitative method research design was used in this study, with survey phases serving as the data gathering technique. Moreover, this study was conducted throughout Malaysia with a total of 218 valid questionnaires were obtained from selected undergraduate student in Malaysia. Structured Equation Modelling (SEM) using Partial Least Square (PLS) was used to analyse the data and to test four hypotheses developed in this study. Finding of the study shows that relationship between Performance Expectancy and Behavioural Intension is significant, t-value and P-value is (t=2.862, p=0.002); relationship between Effort Expectancy and Behavioural Intension is significant, t-value and P-value is (t=2.861, p=0.002); relationship between Social Influence and Behavioural Intension is significant, t-value and P-value is (t=2.357, p=0.009); and relationship between Facilitating Conditions and Behavioural Intension is significant, tvalue and P-value is (t=3.962, p=0.000). Finally, this research can be extended by more investigations and analysis of the many variables, as well as exploring other potential areas of inquiry. Furthermore, educational institutions need to make disclosures about their awareness of using ChatGPT guided by the correct guidelines.

REFERENCES

- Abdulmunem, R. A. (2023). Artificial intelligence in education. Comparative Research on Diversity in Virtual Learning: Eastern vs. Western Perspectives, January, 241–255. https://doi.org/10.4018/978-1-6684-3595-3.ch012
- Alafnan, M. A., & Dishari, S. (2023). ChatGPT as an Educational Tool: Opportunities, Challenges, and Recommendations for Communication, Business Writing, and Composition Courses. *Journal of Artificial Intelligence and Technology*, 3(2), 60–68. https://doi.org/10.37965/jait.2023.0184
- Alazzam, M. B., & Basari, A. S. H. (2015). EHRS acceptance in Jordan hospitals by UTAUT2 model: Preliminary result. *Journal of Theoretical and Applied Information Technology*, 78(3), 473–482.
- Ali, K. A. ., & Buang, M. (2016). Study on Factors that Influence Innovation in Malaysian Public Sector Akademia Baru. Journal of Advanced Research in Business and Management Studies, 4(1), 60–73.
- Cahn, B. J. (2017). Chatbot : Architecture, Design & Development.
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, 8, 75264–75278. https://doi.org/10.1109/ACCESS.2020.2988510
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences.
- Colace, F., & De Santo, M. (2018). Chatbot for e-learning: A case of study. International Journal of Mechanical Engineering and Robotics Research, 7(5), 528–533. https://doi.org/10.18178/ijmerr.7.5.528-533
- Diamantopoulos, A., & Siguaw, J. A. (2006). Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, *17*(4), 263–282.
- Dotimineli, A., & Mawardi, M. (2021). Development of STEM Integrated PBL-Based Student Worksheets in Energetic Materials of First-Year Students. *Journal of Physics: Conference Series*, 1788(1), 1–12. https://doi.org/10.1088/1742-6596/1788/1/012045
- Dwivedi, Y. K., Kshetri, N., Hughes, L., & Slade, E. L. (2023). Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71(March). https://doi.org/10.1016/j.ijinfomgt.2023.102642
- Falk, R. E., & Miller, N. B. (1992). A primer for solf modelling.
- Firat, M. (2023). How Chat GPT Can Transform Autodidactic Experiences and Open Education? Future of Education View project Visual Perception in Educational Design View project. April. https://doi.org/10.31219/osf.io/9ge8m
- Foroughi, B., Senali, M. G., Iranmanesh, M., Khanfar, A., Ghobakhloo, M., Annamalai, N., & Naghmeh-Abbaspour, B. (2023). Determinants of Intention to Use ChatGPT for Educational Purposes: Findings from PLS-SEM and fsQCA. *International Journal of Human-Computer Interaction*, 0(0), 1–20. https://doi.org/10.1080/10447318.2023.2226495

García-peñalvo, F. J. (2023). *The perception of Artificial Intelligence in educational contexts after the launch of*. 24, 1–9. Gefen, D., & Straub, D. (2005). A Practical Guide To Factorial Validity Using PLS-Graph: Tutorial And Annotated Example.

Communications of the Association for Information Systems. https://doi.org/10.17705/1cais.01605

- Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika*, 61(1), 101–107. https://doi.org/10.1093/bi-omet/61.1.101
- Goksel, N., & Bozkurt, A. (2023). Artificial Intelligence in Education: Current Insights and Future Perspectives. Handbook of Research on Learning in the Age of Transhumanism, January, 224–236. https://doi.org/10.4018/978-1-5225-8431-5.ch014
- Gold, A. H., Malhotra, A., & Segars, A. H. (2015). Knowledge Management: An Organizational Capabilities Perspective. Journal of Management Information Systems, 18(1), 185–214.
- Habibi, A., & Muhaimin, M. (2023). ChatGPT in higher education learning: Acceptance and use. *Computers and Education: Artificial Intelligence*, 5(July), 100190. https://doi.org/10.1016/j.caeai.2023.100190
- Hamid, T., & Chhabra, M. (2022). A Review on Artificial Intelligence in Orthopaedics. Proceedings of the 2022 9th International Conference on Computing for Sustainable Global Development, INDIACom 2022, 365–369. https://doi.org/10.23919/INDIACom54597.2022.9763178
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. https://doi.org/10.1007/s11747-014-0403-8
- Huang, F., Teo, T., & Zhao, X. (2023). Examining factors influencing Chinese ethnic minority English teachers' technology adoption: an extension of the UTAUT model. *Computer Assisted Language Learning*, 0(0), 1–23. https://doi.org/10.1080/09588221.2023.2239304
- Jarrah, A. M., Wardat, Y., & Fidalgo, P. (2023). Using ChatGPT in academic writing is (not) a form of plagiarism: What does the literature say? *Online Journal of Communication and Media Technologies*, 13(4). https://doi.org/10.30935/ojcmt/13572
- Jiao, W., Wang, W., Xing, J. H., Shi, S., & Tu, Z. (2022). Is ChatGPT A Good Translator? Yes With GPT-4 As The Engine.
- Kasneci, E., Sessler, K., & Küchemann, S. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103(March). https://doi.org/10.1016/j.lindif.2023.102274
- Kline, R. B. (2015). Principles and practice of structural equation modeling.
- Koh, J. (2014). Sense of Virtual Community : A Conceptual Framework and Empirical Sense of Virtual Community : Conceptual Framework and Empirical Validation. December 2003.
- Kok, S.-L., & Siripipatthanakul, S. (2023). Artificial Intelligence (AI) Adoption: The Case of the Malaysian Financial Industry. *Advance Knowledge for Executives (AKE)*, 2(4), 1–15. https://www.researchgate.net/publication/375922633
- Lau. (2002). How is AI in Malaysia (2023)? https://thelead.io/artificial-intelligence/how-is-ai-in-malaysia-2023/
- Nabiyev, V., Karal, H., Arslan, S., Erumit, L. A. K., & Cebi, A. (2013). An artificial intelligence-based distance education system: Artimat. *Turkish Online Journal of Distance Education*, 14(2), 81–98.
- Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development Education Sector United Nations Educational, Scientific and Cultural Organization. *Ministerio De Educación*, 1–46. https://en.unesco.org/themes/education-policy-
- Rahi, S. (2017). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *International Journal of Economics & Management Sciences*, 06(02). https://doi.org/10.4172/2162-6359.1000403
- Rahman, A. M., Al Mamun, A., & Islam, A. (2018). Programming challenges of chatbot: Current and future prospective. 5th IEEE Region 10 Humanitarian Technology Conference 2017, R10-HTC 2017, 2018-Janua(March), 75–78. https://doi.org/10.1109/R10-HTC.2017.8288910
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 3.0: An Updated Guide and Practical Guide to Statistical Analysis.
- Ranoliya, B. R., Raghuwanshi, N., & Singh, S. (2017). Chatbot for university related FAQs. 2017 International Conference on Advances in Computing, Communications and Informatics, ICACCI 2017, 2017-Janua(January), 1525–1530. https://doi.org/10.1109/ICACCI.2017.8126057
- Runhaar, H. (2016). Tools for integrating environmental objectives into policy and practice: What works where? *Environmental Impact Assessment Review*, 59(2015), 1–9. https://doi.org/10.1016/j.eiar.2016.03.003
- Sa'at, N. H., Mamat, I., & Nawang, W. M. Z. W. (2017). Pola perubahan sosiobudaya dan mobiliti sosial dalam kalangan komuniti muara di Pantai Timur. Akademika, 87(3), 165–178. http://eprints.unisza.edu.my/5463/
- Samsurijan, M. S., & Ebekozien, A. (2023). Artificial intelligence in urban services in Malaysia: a review. *PSU Research Review*. https://doi.org/10.1108/PRR-07-2021-0034
- Sekaran, U., & Bougie, R. (2020). Research Methods For Business A Skill Building Approach (Vol. 8th).
- Shadbolt, N. (2022). Species of Artificial Intelligence. 151(2), 28-42.
- Shen, K. N., Yu, A. Y., & Khalifa, M. (2010). Knowledge Contribution in Virtual Communities: Accounting for Multiple Dimensions of Social Presence through Social Identity. Behavior & Information Technology. 29, 337–348. https://doi.org/https://doi.org/10.1080/01449290903156622

- Shi, X., Du, X., & Song, X. (2023). Research on Miniaturization Trend of ChatGPT Technology Model. Journal of Artificial Intelligence and Technology, 3(3), 95–99. https://doi.org/10.37965/jait.2023.0298
- Soper Daniel. (2023). A-priori Sample Size Calculator for Structural Equation Models. In *Https://Www.Danielsoper.Com/Stat-calc/Calculator.Aspx?Id=*89. https://www.danielsoper.com/statcalc
- Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*, 36(2), 111–147.
- Subramani, M., Jaleel, I., & Mohan, S. K. (2023). Evaluating the performance of ChatGPT in medical physiology university examination of phase I MBBS. *Advances in Physiology Education*, 47(2), 270–271. https://doi.org/10.1152/ADVAN.00036.2023
- Taecharungroj, V. (2023). "What Can ChatGPT Do?" Analyzing Early Reactions to the Innovative AI Chatbot on Twitter. *Big Data and Cognitive Computing*, 7(1). https://doi.org/10.3390/bdcc7010035
- Timms, M. J. (2016). Letting Artificial Intelligence in Education out of the Box: Educational Cobots and Smart Classrooms. International Journal of Artificial Intelligence in Education, 26(2), 701–712. https://doi.org/10.1007/s40593-016-0095y
- Toosi, A., Bottino, A. G., Saboury, B., Siegel, E., & Rahmim, A. (2021). A Brief History of AI: How to Prevent Another Winter (A Critical Review). *PET Clinics*, *16*(4), 449–469. https://doi.org/10.1016/j.cpet.2021.07.001
- Viswanath Venkatesh, Tracy Ann Sykes, Ruba Aljafari, M. S. P. (2021). The future is now: calling for a focus on temporal issues in information system research. 121. https://doi.org/https://doi.org/10.1108
- Wang, P. (2021). Research on the Application of Artificial Intelligence in the Innovative Development of Visual Communication Design Education. *Journal of Physics: Conference Series*, 1744(3). https://doi.org/10.1088/1742-6596/1744/3/032196
- Wogu, I. A. P., Misra, S., Assibong, P. A., Olu-Owolabi, E. F., Maskeliūnas, R., & Damasevicius, R. (2019). Artificial intelligence, smart classrooms and online education in the 21st century: Implications for human development. *Journal of Cases on Information Technology*, 21(3), 66–79. https://doi.org/10.4018/JCIT.2019070105