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ARTIFICIAL INTELLIGENCE (AI) USAGE AMONG MALAYSIAN HIGHER LEARNING INSTITUTIONS: A STRUCTURED REVIEW ON THE ROLES AND IMPACT OF CHATGPT

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Abstract: *ChatGPT, known as Chat Generative Pre-Trained Transformer, is the AI tool that was created by OpenAI that uses natural language processing to simulate real-time conversations with humans. The use of ChatGPT nowadays has increased in several years. ChatGPT has the potential to raise the level of student work significantly. It may benefit students in a variety of ways, including by offering helpful resources and information, assisting with language proficiency development, encouraging teamwork, enhancing time effectiveness and efficiency, and offering encouragement and support. However, there are several issues and difficulties associated with using ChatGPT in higher education. Researchers have expressed doubts about the accuracy and validity of the data provided by ChatGPT, alleging that it may contain manipulated or unreliable data. The findings show the advantages of using ChatGPT not only for students but also for lecturers and demonstrate ChatGPT's engagement in students' tasks. Therefore, the purpose of this study is to determine the impact of ChatGPT among students in higher education and to identify the factors influencing students to use ChatGPT. Structural Literature Review (SLR) was adopted to determine the purpose of the study. The conceptual framework was created to identify the factors influencing the use of ChatGPT among students.*

Keywords: *AI chatbots, ChatGPT, higher education, performance expectancy, effort expectancy, social influence, perceived usefulness.*

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Introduction

Compared to the past, when technology had not yet advanced, there are many more technologically based tools available today that may be applied to assist students with completing their assignments. Artificial intelligence, also known as AI, is a technology that is constantly developing. According to Chen, Jiang, Jia & Liu (2022) and Alzahrani (2023), AI is the ability of computers to do intellectual tasks, particularly learning and problem-solving, which frequently connect with human cognitive processes. In addition to expanding human knowledge, AI has affected how individuals work and perceive their environment throughout time (Nurul Huda, Abdurrahman & Nurul Hidayati, 2023). Most tasks get simpler when AI is used since it offers a variety of tools to assist students with their assignments. AI tools refer to software programs or systems that use AI and machine learning methods to carry out certain tasks or handle specific issues. AI tools may be as simple as programs that carry out particular activities or as complicated as systems that provide extensive data analysis and machine learning (Shersiya, 2023). Students can use several AI tools to do their assignments, such as AI chatbots.

A chatbot is a software program that functions as an online assistant and medium between a human and a robot. It has gained much popularity in recent years, mainly due to significant advancements in artificial intelligence, machine learning, and other fundamental technologies such as natural language processing and neural network technology. (Gupta et al., 2020). When given text samples, an AI chatbot can learn to create realistic conversations with humans, and a tool for image recognition can learn to recognise and describe items in photos by looking through millions of instances (Craig et al., 2024). An example of an AI chatbot that is used nowadays is ChatGPT.

ChatGPT, known as Chat Generative Pre-Trained Transformer, is the AI tool that was created by OpenAI that uses natural language processing to simulate real-time conversations with humans. (Bhullar et al., 2024; De Angelis et al., 2023; Jeon et al., 2023). People discovered that ChatGPT is useful for a variety of tasks, including creating original content, responding to requests, giving answers, making recommendations, and even just having chats (Bhullar et al., 2024; Crawford et al., 2023; Thorp, 2023; Wu & Yu, 2024). ChatGPT has become a commonly used AI tool, especially among students, in recent years. Several research studies have shown that ChatGPT could transform the education industry by enhancing both the quality and availability of educational opportunities. Expanding learning opportunities and access to educational materials has the potential to have a substantial influence on the education sector (Sinnapan et al., 2023; Kuhail et al., 2023).

According to Jo (2024) and Fauzi et al. (2023), ChatGPT's interactive feature can drastically change the way that students interact, learn, and get involved with academic content. ChatGPT is a useful digital assistant that uses clear, understandable language to help people understand a wide range of varied and complicated issues and because of these characteristics, ChatGPT can completely change the way that teaching is delivered and transform the way that education is going forward (Tlili et al., 2023). The application of ChatGPT in education has a chance to increase student effectiveness and productivity significantly. Users considered ChatGPT to be helpful in finding ideas and information, interpreting content, and offering substitute questions to help them comprehend the topic better (Firaina & Sulisworo, 2023).

However, there are several issues and difficulties associated with using ChatGPT in higher education. Researchers have expressed doubts about the accuracy and validity of the data

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provided by ChatGPT, alleging that it may contain manipulated or unreliable data (Sila et al., 2023; Sullivan et al., 2023). Given the rising frequency of data violations, students may be hesitant to share their research questions and debates with an AI tool (Jo, 2024). Some students who use ChatGPT may feel guilty about using it since they perceive it as a kind of "cheating"(Anders, 2023; Jo, 2024). Apart from that, ChatGPT's limitations in education may be attributed to its low capacity to comprehend complex contexts and its limited search capabilities on the platform. ChatGPT can produce understandable text, but it may not fully comprehend complex situations, leading to potential inaccuracies (Asmiddin et al., 2023). Therefore, the purpose of this paper is to determine the impact of ChatGPT among students in higher education and to identify the factors influencing students to use ChatGPT.

Literature Review

Introduction of ChatGPT

ChatGPT, known as Chat Generative Pre-Trained Transformer, is the AI tool that was created by OpenAI that uses natural language processing to simulate real-time conversations with humans. (Bhullar et al., 2024; De Angelis et al., 2023; Jeon et al., 2023). OpenAI first introduced ChatGPT on November 30, 2022. It quickly gained media attention for its thorough and well-spoken answers to searches covering a wide range of various fields (Dempere et al., 2023). Upon its public release in November 2022, OpenAI's Chat GPT quickly gained one million users in just five days, showing its immediate rise to popularity in contrast to other applications, which required approximately 300 days for Facebook to reach that exact milestone, 720 days for Twitter, and 75 days for Instagram (Biswas, 2023; Firat, 2023; Selvanathan & Narayanan, 2024).

ChatGPT is an artificial intelligence (AI) natural language processing (NLP) system that can simulate human-to-user conversation. This digital assistant makes it possible to reply to questions and help with tasks like composing emails, writing essays, creating software, and more (Dempere et al., 2023). It is because ChatGPT uses the latest Generative Pre-Trained Transformer (GPT) which is GPT-3. ChatGPT is a chatbot that uses the GPT-3 language model to generate responses in accordance with input from the user (Firat, 2023; OpenAI, 2023). Creating Large-scale language model Pre-trained Transformer 3, or GPT-3, was developed by OpenAI and can generate text with 175 billion parameters. It has been taught with an enormous amount of data (Brown, 2020; Firat, 2023). As opposed to conventional chatbots, ChatGPT is built on OpenAI's GPT-3, the third version of the GPT series, which is more sophisticated in terms of scale (175 billion parameters as opposed to 1.5 billion in GPT-2), larger datasets used as training data, more modification, improved capabilities, and creating text that is more similar to humans (Brown, 2020; Tlili et al., 2023). By utilizing GPT-3's features, Chat GPT responds to requests from users casually and naturally (OpenAI, 2023; Firat, 2023). ChatGPT, a combination of Natural Language Processing and deep learning-based generative AI, generates text that resembles human writing and facilitates more realistic conversations through the ability to carry out discussions (Tlili et al., 2023).

Application of ChatGPT in higher education

ChatGPT has garnered significant interest in education due to its potential to enhance students' learning experiences by providing immediate feedback, focusing on specific learning objectives, and providing customized responses. This technology promotes engagement and intellectual development by adapting to learning styles and providing ongoing assistance for gaining knowledge (Selvanathan & Narayanan, 2024).

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Integration of ChatGPT into higher education is an international phenomenon that is not limited to any one country or place. Educational institutions throughout the world are experimenting with ChatGPT to enhance their ways of teaching and acquiring knowledge (Sila et al., 2023). With nearly 5,000 published papers on the subject so far, ChatGPT has had a significant impact on higher education as well as learning in general. However, the peer-reviewed literature is still a ways off, with only eight published papers currently listed on the Web of Science, the majority of which remain in early access (Google Scholar, 2023; Crawford, 2023). There are currently not many excellent research on the subject published in prestigious journals. There were 21 papers in Scopus as of February 21, 2023, with ChatGPT appearing in the title, abstract, or keywords (Crawford et al., 2023).

The adoption and use of ChatGPT as an advanced teaching tool may be influenced by its acceptance in higher education, which is why it is important. Academics in higher education embrace ChatGPT. A significant change in the environment of teaching and learning might result from academics at Higher Education Institutions (HEIs) implementing ChatGPT technology (Au, 2023). ChatGPT has the potential to raise the standard of student performance significantly. It may benefit students in a variety of ways, including by offering helpful resources and information, assisting with language skills development, encouraging teamwork, enhancing time efficiency and effectiveness, and offering assistance and encouragement (Fauzi et al., 2023).

Meanwhile, in Malaysia, the application of generative artificial intelligence technology (ChatGPT included) in higher education was addressed in an advisory letter released by the Malaysia Qualification Agency (MQA) on March 31, 2023 (Malaysia Qualification Agency, 2023; Sila et al., 2023). MQA found that AI applications can enhance education and learning in several ways, including assisting students with self-learning by providing responses designed to their preferences, interests, and comprehension levels, enabling students to enhance the quality of their assignments and facilitating interactive teaching and learning between learners and instructors (Sila et al., 2023).

Malaysian students often view the usage of ChatGPT in the learning environment positively (Elkhodr et al., 2023; Selvanathan & Narayanan, 2024). According to Lou (2023) and Selvanathan and Narayanan (2024), they stated that students and educators consider ChatGPT to be a helpful tool for providing timely feedback, answering questions, and providing assistance. It is regarded as a useful tool for educators to improve the layout and organization of their lesson plans, thus improving their effectiveness and productivity.

However, according to MQA (2023) and Sila et al. (2023), academic credibility is impacted by excessive dependence on or careless use of AI, such as ChatGPT. As stated in the advising note, MQA recommends that academic staff foster the ethical use of AI in a variety of teaching and learning activities in order to set an example for students and advise them on the secure, responsible, and integrity-driven use of AI technology. Therefore, MQA advises students to understand that while ChatGPT and other AI technologies might enhance learning, they should not replace their responsibilities as learners. Before using ChatGPT's information for learning, students must confirm that it is accurate.

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Methodology

This study methodology is based on the structured literature review (SLR) methodology. (Webster & Watson, 2002; Rosman, 2020; Rosman et al., 2022). Previous research that was significant to the investigations is needed for this method. Firstly, the articles and journals were searched in the online database tools EzAccess and the online databases that were used are Emerald Insight, Science Direct and Scopus. The articles were searched using the keywords which are "ChatGPT" or "Use of ChatGPT" or "Impacts of ChatGPT towards student" or "Usage of ChatGPT in higher education". The articles also were limited to articles and journals and the date of publication for the article was limited to new articles and journals from 2014 to 2024. Secondly, the selected articles and journals were identified based on the relevant topics and issues. The abstract, introduction, literature review and conclusion are the important parts of searching for relevant research to be applied in this study.

Conceptual Model

Four independent variables were established based on prior research which are performance expectancy, effort expectancy, social influence and perceived usefulness. Figure 1 below shows the conceptual model for this study.

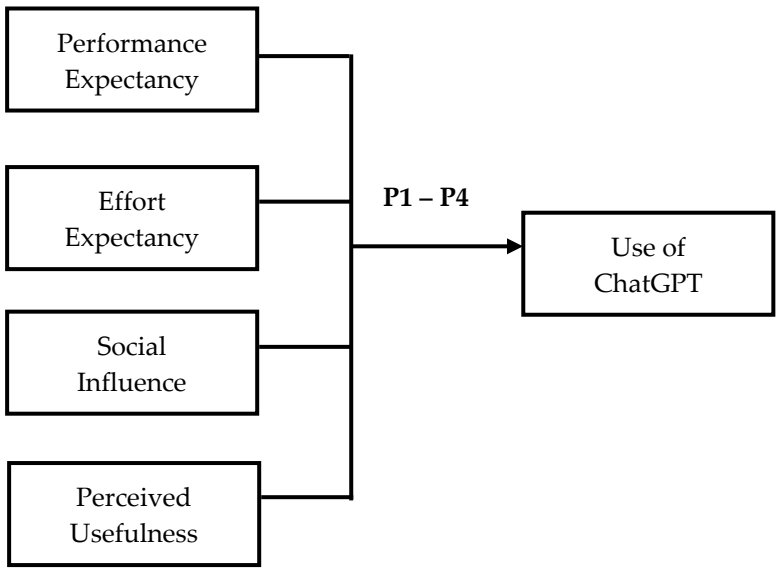

Figure 1: Conceptual Framework

According to the theoretical framework of the Unified Theory of Acceptance and Use of Technology (UTAUT), performance expectancy can be defined as users' perceptions of their capacity to optimize performance in a variety of activities and efforts using a particular technological system. The system in this study applies to the utilization of AI, especially, ChatGPT in educational activities (Habibi et al., 2023; Venkatesh, 2022; Venkatesh et al., 2012). Based on this study's definition of performance expectancy, which is based on the usage of ChatGPT, students may be able to increase the efficiency of their learning(Heng, 2023). Students be able to do jobs faster, learn more easily, be more productive and effective learners, and perform better when using ChatGPT as a tool for learning(Foroughi et al., 2023). According to Strzelecki (2023) performance expectancy in the research evaluating student's opinion on the use of ChatGPT in higher education, he stated that students think that applying ChatGPT in their learning will improve their efficiency and learning outcomes. In addition, additional

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elements that impact the beneficial relationship between ChatGPT utilization of technology and performance expectancy include an easily accessible interface, the provision of training materials, pressure from peers, and institutional support. Researchers' expectations have a significant impact on how much ChatGPT is used in the particular environment of Malaysian HEIs as they evaluate the technology's potential benefits in helping them fulfil their duties as educators(Au, 2023).

P1: *Performance Expectancy has a significant and positive relationship with the Use of ChatGPT.*

According to UTAUT, effort expectancy is described as a variable to assess how user-friendly technology-based tools and systems (Habibi et al., 2023; Venkatesh et al., 2012). Students' effort expectancy indicates how simple they think it is to apply ChatGPT to their studies (Foroughi et al., 2023). Previous research has demonstrated that effort expectancy is a significant factor in determining ChatGPT usage (Foroughi et al., 2023; Hooda et al., 2022; Kabra et al., 2017; Moorthy et al., 2019). Al-Emran et al. (2023) and Foroughi et al. (2023) discovered that the use of ChatGPT for sharing knowledge is influenced by effort expectancy. It does not take much more work for learners to learn how to utilize ChatGPT because it works similarly to an internet search engine. Students are more likely to think about using ChatGPT for studying in the future if it is easy to understand, simple to use, and straightforward (Foroughi et al., 2023). In addition, academicians' desire and intention to use ChatGPT in their work is referred to as the adoption of the technology. This includes using ChatGPT and incorporating it into their regular educational routines. The positive relationship between effort expectancy and ChatGPT usage indicates that academics are more likely to adopt and use ChatGPT in their jobs as the expectation of accessibility rises (Au, 2023).

P2: *Effort Expectancy has a significant and positive relationship with the use of ChatGPT.*

Social influence is described as the level to which a person believes that significant others think they should utilize the new technology (Lai et al., 2024; Venkatesh et al., 2003). Social influence has been widely recognized as an important factor in higher education students' utilization of e-learning technologies (Ahmed et al., 2021; Lai et al., 2024; Raman & Thannimalai, 2021). The authors evaluated the students' opinion that they should utilize ChatGPT for their studies using social influence, which is a measure of how much importance individuals place on opinions(Foroughi et al., 2023). Social influence has demonstrated a great ability to predict ChatGPT acceptability in an educational environment for general usage (Lai et al., 2024; Strzelecki, 2023) . According to Lai et al. (2024), social influence describes how much people think significant others, such as friends, teachers and classmates, think they should utilize ChatGPT to support their evaluations. Lai et al. (2024) anticipate that students will be motivated to utilize ChatGPT if significant people agree.

P3: *Social Influence has a significant and positive relationship with the Use of ChatGPT.*

Perceived usefulness is described as a person's subjective assessment and belief in the effectiveness of using a particular information technology or work procedures (Lin et al., 2007; Tiwari et al., 2023). It is believed that the acceptance and popularity of any information technology depend on its utility. Students are willing to accept new technology if they feel there is something valuable in it for them (Rahman et al., 2023). For example, students are more likely to utilize ChatGPT for academic reasons if they believe it to be a helpful tool that can

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instantly identify relevant content, offer clear explanations, and produce well-structured answers (Firat, 2023; Ki & Liew, 2024). ChatGPT helps students who have trouble understanding difficult material and topics by offering explanations and summaries in simple language, making academic information more approachable. ChatGPT's perceived usefulness will be greatly impacted by providing students with the correct and latest information (Foroughi et al., 2023; Ki & Liew, 2024).

P4: *Perceived Usefulness has a significant and positive relationship with the Use of ChatGPT.*

Conclusion

In this study, the objective is to determine the impact of ChatGPT among students in higher education and to identify the factors influencing students to use ChatGPT. To pursue this objective, a systematic literature review (SLR) methodology was used. Based on the previous research, there were four factors influencing the use of ChatGPT among students, which are performance expectancy, effort expectancy, social influence, and perceived usefulness. Conceptual models were created to identify the preposition of the factors.

Next, to verify the conceptual model for this study, the quantitative method will be conducted. Several tests will be done to verify the model, such as Cronbach's Alpha Coefficient. The data collection will be performed based on the selected sampling method. The potential respondents that will be selected are higher education students, such as undergraduate students from local universities in Malaysia. The data analysis will be done in the Statistical Package for Social Science (SPSS) version 26 and also SmartPLS version 3.3.3.

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References

Ahmed, R. R., Štreimikienė, D., & Štreimikis, J. (2021). THE EXTENDED UTAUT MODEL AND LEARNING MANAGEMENT SYSTEM DURING COVID-19: EVIDENCE FROM PLS-SEM AND CONDITIONAL PROCESS MODELING. *Journal of Business Economics and Management*, *23*(1), 82-104. https://doi.org/10.3846/jbem.2021.15664

Anders, B. A. (2023). Is using ChatGPT cheating, plagiarism, both, neither, or forward thinking? *Patterns*, *4*(3), 100694. https://doi.org/10.1016/j.patter.2023.100694

Asmiddin, A., Nurhuda, P., & Megawati, R. (2023). Advantages and Disadvantages of Chatgpt in Science Learning: A Systematic Literature Review. *Jurnal Penelitian Pendidikan IPA*, *9*, 1335-1341. https://doi.org/10.29303/jppipa.v9i12.6576

Au, W. C. (2023). *Examining the adoption of chatgpt technology among academics in higher education institutions in malaysia* UTAR].

Bhullar, P. S., Joshi, M., & Chugh, R. (2024). ChatGPT in higher education - a synthesis of the literature and a future research agenda. *Education and Information Technologies*. https://doi.org/10.1007/s10639-024-12723-x

Biswas, S. (2023). Role of ChatGPT in Computer Programming. https://doi.org/10.58496/MJCSC/2023/002

Brown, T. B. (2020). Language models are few-shot learners. *arXiv preprint ArXiv:2005.14165*.

Craig, L., Laskowski, N., & Tucci, L. (2024, June 11). *What is Artificial Intelligence (AI)?: Definition from TechTarget*. Enterprise AI. https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-

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Journal of Islamic, Social, Economics and Development (JISED)
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Intelligence#:~:text=For%20example%2C%20an%20AI%20chatbot,by%20reviewing%20millions%20of%20examples.

Crawford, J., Cowling, M., & Allen, K.-A. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). *Journal of University Teaching and Learning Practice*, *20*(3). https://doi.org/10.53761/1.20.3.02

De Angelis, L., Baglivo, F., Arzilli, G., Privitera, G. P., Ferragina, P., Tozzi, A. E., & Rizzo, C. (2023). ChatGPT and the rise of large language models: the new AI-driven infodemic threat in public health. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1166120

Dempere, J., Modugu, K., Hesham, A., & Ramasamy, L. K. (2023). The impact of ChatGPT on higher education. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1206936

Elkhodr, M., Gide, E., Wu, R. M. X., & Darwish, O. (2023). ICT students' perceptions towards ChatGPT: An experimental reflective lab analysis. *STEM Education*, *3*, 70. https://doi.org/10.3934/steme.2023006

Fauzi, F., Tuhuteru, L., Sampe, F., Ausat, A. M. A., & Hatta, H. R. (2023). Analysing the Role of ChatGPT in Improving Student Productivity in Higher Education. *Journal on Education*, *5*(4), 14886-14891. https://doi.org/10.31004/joe.v5i4.2563

Firaina, R., & Sulisworo, D. (2023). Exploring the Usage of ChatGPT in Higher Education: Frequency and Impact on Productivity. *Buletin Edukasi Indonesia*, *2*(01), 39-46. https://doi.org/10.56741/bei.v2i01.310

Firat, M. (2023). *How Chat GPT Can Transform Autodidactic Experiences and Open Education?* 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.

Gupta, A., Hathwar, D., & Vijayakumar, A. (2020). *Introduction to AI Chatbots*.

Habibi, A., Muhaimin, M., Danibao, B. K., Wibowo, Y. G., Wahyuni, S., & Octavia, A. (2023). ChatGPT in higher education learning: Acceptance and use. *Computers and Education: Artificial Intelligence*, *5*, 100190. https://doi.org/https://doi.org/10.1016/j.caeai.2023.100190

Heng, W. N. (2023). *Adoption of AI technology in education among UTAR students: the case of Chatgpt* UTAR].

Hooda, A., Gupta, P., Jeyaraj, A., Giannakis, M., & Dwivedi, Y. K. (2022). The effects of trust on behavioral intention and use behavior within e-government contexts. *International Journal of Information Management*, *67*, 102553.

Jeon, J., Lee, S., & Choi, S. (2023). A systematic review of research on speech-recognition chatbots for language learning: Implications for future directions in the era of large language models. *Interactive Learning Environments*, 1-19. https://doi.org/10.1080/10494820.2023.2204343

Jo, H. (2024). From concerns to benefits: a comprehensive study of ChatGPT usage in education. *International Journal of Educational Technology in Higher Education*, *21*(1). https://doi.org/10.1186/s41239-024-00471-4

Kabra, G., Ramesh, A., Akhtar, P., & Dash, M. K. (2017). Understanding behavioural intention to use information technology: Insights from humanitarian practitioners. *Telematics and Informatics*, *34*(7), 1250-1261.

Ki, Y. X., & Liew, D. X. S. (2024). *Determinants that affect usage intention on ChatGPT among university students in Malaysia* UTAR].

Lai, C. Y., Cheung, K. Y., Chan, C. S., & Law, K. K. (2024). Integrating the adapted UTAUT model with moral obligation, trust and perceived risk to predict ChatGPT adoption for

Volume: 9 Issues: 66 [September, 2024] pp. 828 - 836
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.jised.com
DOI: 10.55573/JISED.096668

assessment support: A survey with students. *Computers and Education: Artificial Intelligence*, *6*, 100246. https://doi.org/https://doi.org/10.1016/j.caeai.2024.100246

Lin, C. H., Shih, H. Y., & Sher, P. J. (2007). Integrating technology readiness into technology acceptance: The TRAM model. *Psychology & Marketing*, *24*(7), 641-657.

Moorthy, K., Chun T'ing, L., Ming, K. S., Ping, C. C., Ping, L. Y., Joe, L. Q., & Jie, W. Y. (2019). Behavioral intention to adopt digital library by the undergraduates. *International Information & Library Review*, *51*(2), 128-144.

Rahman, M. S., Sabbir, M. M., Zhang, D. J., Moral, I. H., & Hossain, G. M. S. (2023). Examining students' intention to use ChatGPT: Does trust matter? *Australasian Journal of Educational Technology*, 51-71. https://doi.org/10.14742/ajet.8956

Raman, A., & Thannimalai, R. (2021). Factors Impacting the Behavioural Intention to Use E-learning at Higher Education amid the Covid-19 Pandemic: UTAUT2 Model. *Psychological Science & Education*, *26*(3).

Selvanathan, B., & Narayanan, S. (2024). Chatgpt in Higher Education Malaysia: An Opportunity or Threat to The Education System? *International Journal of Academic Research in Progressive Education and Development*, *13*, 965-979. https://doi.org/10.6007/IJARPED/v13-i3/21455

Sila, C., William, C., Yunus, M., & Rafiq, K. (2023). Exploring Students' Perception of Using ChatGPT in Higher Education. *International Journal of Academic Research in Business and Social Sciences*, *13*(12), 4044-4054.

Strzelecki, A. (2023). To use or not to use ChatGPT in higher education? A study of students' acceptance and use of technology. *Interactive Learning Environments*, 1-14. https://doi.org/10.1080/10494820.2023.2209881

Sullivan, M., Kelly, A., & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning. *6*. https://doi.org/10.37074/jalt.2023.6.1.17

Thorp, H. H. (2023). ChatGPT is fun, but not an author. *Science*, *379*(6630), 313-313. https://doi.org/10.1126/science.adg7879

Tiwari, C. K., Bhat, M. A., Khan, S. T., Subramaniam, R., & Khan, M. A. I. (2023). What drives students toward ChatGPT? An investigation of the factors influencing adoption and usage of ChatGPT.

Tlili, A., Shehata, B., Adarkwah, M., Bozkurt, A., Hickey, D., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, *15*, 1-24. https://doi.org/10.1186/s40561-023-00237-x

Venkatesh, V. (2022). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research*, *308*(1), 641-652.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.

Wu, R., & Yu, Z. (2024). Do AI chatbots improve students learning outcomes? Evidence from a meta-analysis. *British Journal of Educational Technology*, *55*(1), 10-33.