Vol. 25 No. 2 (2025) Jurnal al- Sirat
https://doi.org/10.64398/alsirat.v25i2.450

No. 25 Vol. 2 (2025)
ISSN: 1823-4313 / e-ISSN: 2785-9169
https://ejournal.unipsas.edu.my/

BEYOND THE SCREEN: FACTORS SHAPING CHATGPT UTILISATION IN HIGHER EDUCATION

Wan Zahidah Wan Sulaiman[1], Farahiyah Abd Jalil[1], Ida Khairiyah Mohd Yusof[1], Wan Hashridz Rizal Wan Abu Bakar [2]

[1]Faculty of Language and Foundation Studies, Sultan Ahmad Shah Pahang Islamic University (UnIPSAS)
[2]Faculty of Islamic Studies Sultan Ahmad Shah Pahang Islamic University (UnIPSAS)

Abstract

This concept paper investigates the adoption of ChatGPT in higher education, focusing on key factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions. This study used qualitative content analysis of over 15,000 peer-reviewed academic sources from Google Scholar (2022–2024) to identify key themes surrounding ChatGPT, including "ChatGPT," "artificial intelligence," "higher education," "user adoption," and "ethical implications". Findings indicate that while students recognize ChatGPT's potential to enhance academic performance, concerns about academic integrity and overreliance on AI remain significant. The research underscores the necessity of creating supportive environments and providing comprehensive training to address these ethical challenges. The significance of this study lies in its insights into the dynamics of AI integration in educational contexts, guiding educators and policymakers in developing strategies that harmonize technological advantages with ethical standards. Results emphasize the critical role of performance expectancy and social influence in shaping students' engagement with ChatGPT. In conclusion, the study advocates for further exploration of AI's effects on learning efficacy and cognitive skill development across various educational settings.

Keywords: ChatGPT, higher education, AI adoption, factors influencing

Perkembangan Artikel

Diterima: 30 September 2025
Disemak: 19 Oktober 2025
Diterbit: 31 Oktober 2025

*Corresponding Author:
Wan Zahidah Wan Sulaiman, 1Faculty of Language and Foundation Studies, Sultan Ahmad Shah Pahang Islamic University (UnIPSAS)

Email: zahidah@unipsas.edu.my

INTRODUCTION

The incorporation of Artificial Intelligence (AI) technologies into higher education institutions is effecting a profound transformation that is fundamentally altering the conventional paradigms of teaching and learning practices that have long been established. According to Strzelecki (2023), among the myriad of technological innovations emerging within this context, ChatGPT, which is an advanced model powered by artificial intelligence, has surfaced as a particularly transformative instrument, widely acknowledged and celebrated for its remarkable capacity to significantly enhance academic practices while requiring minimal effort on the part of users for its implementation and integration into educational setting.

Across the globe, an increasing number of university students are enthusiastically adopting ChatGPT as a means to streamline their academic studies; however, the extent and manner of its utilisation within the realm of higher education continues to exhibit considerable variability and inconsistency. Specifically, in the context of Malaysian universities, a range of distinctive challenges impedes the effective adoption of this cutting-edge technology, as concerns related to ethical considerations, a palpable resistance to change, and a prevailing lack of comprehensive understanding regarding the vast capabilities of ChatGPT persistently hinder its successful integration into educational frameworks. Both students and educators are expressing considerable apprehensions regarding the implications for academic integrity, as there are fears that an excessive reliance on ChatGPT could potentially lead to issues of plagiarism, a degradation of essential writing skills, or significant compromises to data privacy standards (Enriquez et al., 2024; Archibald and Clark, 2023).

Furthermore, the situation is exacerbated by an evident lack of adequate training opportunities for educators and a notable deficiency in the requisite expertise among students, which collectively contribute to the underutilisation of this innovative technology, while also being compounded by prevailing scepticism regarding the effectiveness of AI in enhancing learning outcomes, as well as institutional prohibitions that further limit its application (Fecher et al., 2023; Hultgren et al., 2023).

Notwithstanding these formidable barriers, it is important to recognise that ChatGPT possesses the inherent potential to cultivate innovative pedagogical methods and significantly elevate student engagement levels, provided that it is implemented with appropriate guidelines and comprehensive training frameworks in place. This study, which is firmly rooted in the Unified Theory of Acceptance and Use of Technology (UTAUT2), seeks to meticulously explore the multifaceted factors that influence the utilisation of ChatGPT within higher education contexts. By addressing this critical gap in the existing body of research, the study aspires to yield invaluable insights into the various determinants that shape the adoption of artificial intelligence technologies and elucidate their pivotal role in the ongoing transformation of the educational landscape.

DEFINITION OF ARTIFICIAL INTELLIGENCE (AI)

AI is identified as the simulation of human reasoning in machines, permitting them to undertake actions such as learning, addressing challenges, and reaching conclusions (Valadez et al., 2024).

AI also can be defined as the process encompasses the intricate design and meticulous implementation of sophisticated systems that are capable of emulating various aspects of human behavior, while also possessing the remarkable abilities of adaptability to changing circumstances and a deep contextual understanding of their environment and interactions (Oliveira, 2019).

DEFINITION OF CHATGPT

ChatGPT represents a sophisticated language model engineered by OpenAI, employing the GPT-3.5

framework. Its primary objective is to produce responses that closely resemble human dialogue in natural language, following extensive training on substantial datasets. The technique is useful across different industries, involving the elevation of efficiency, the automation of monotonous duties, and the enhancement of user assistance. The importance of ChatGPT resides in its capacity to promote effective communication and disseminate information across various sectors, thereby establishing itself as an invaluable instrument within the realm of natural language processing (Sharma et al., 2024)

THE SCENARIO OF CHATGPT UTILISATION IN HIGHER EDUCATION

The incorporation of ChatGPT within the realm of higher education delineates a complex landscape, presenting an array of advantages and obstacles. On the affirmative side, ChatGPT is acknowledged for its capacity to augment educational experiences through the provision of tailored and immediate assistance, a feature that is greatly esteemed for its adaptability and reactivity in academic environments (Sandu et al., 2024).

It can exert a substantial influence on the design of specialized teaching materials specifically crafted to cater to the heterogeneous needs of individual students, thereby enabling a more tailored educational journey, while concurrently extending necessary support to teachers as they systematically evaluate and interpret the academic efforts and performances of their students in a detailed and comprehensive approach (Rohaizam, 2024).

Moreover, the sophisticated functionalities of ChatGPT possess the potential to considerably optimize and elevate the productivity of tedious and repetitive tasks that educators often face in their professional endeavors, while concurrently fostering an atmosphere that promotes and cultivates autonomous critical thinking abilities among students, a progression that is especially beneficial for those learners who might consider themselves introverted and, as such, may necessitate additional assistance and resources to excel academically (Goli-Cruz, 2023).

Nevertheless, the dependence on the advanced capabilities of ChatGPT, a sophisticated artificial intelligence model, gives rise to a multitude of serious apprehensions pertaining to the preservation of academic integrity, as well as the alarming potential for various forms of academic dishonesty, given that students might, in an unethical manner, resort to utilizing content that has been generated by AI without proper attribution or critical engagement (Consuegra-Fernández et al., 2024; Nebieridze and Jojua, 2024).

According to Consuegra-Fernández et al. (2024), the intricate challenge associated with the differentiation between texts that are authored by students and those that are generated by artificial intelligence algorithms significantly exacerbates the complexity of the evaluation process, a phenomenon that is clearly illustrated by a comprehensive study in which educators encountered considerable difficulty in their attempts to accurately ascertain the true authorship of various written texts.

Moreover, Putra et al. (2023) stated there is an increasing array of concerns regarding the potential effects that the application of ChatGPT may exert on the cultivation and refinement of students' higher-order thinking skills, especially considering the idea that excessive dependence on artificial intelligence tools might indeed lead to the erosion or weakening of these fundamental cognitive competencies that are crucial for academic achievement and critical evaluation.

The incorporation of ChatGPT within the sphere of higher education presents both transformative prospects and substantial challenges. Its capacity to provide tailored learning experiences, support educators, and optimize monotonous tasks significantly enhances productivity and facilitates student development. Nevertheless, apprehensions regarding academic integrity emerge due to the potential exploitation of AI-generated content and the complexities involved in attributing

authorship. Furthermore, an excessive dependency on ChatGPT may impede the cultivation of critical thinking and advanced cognitive skills that are essential for academic achievement. Achieving a balance between its advantages and ethical considerations necessitates deliberate implementation, ensuring that technological advancements augment education by encouraging innovation while upholding academic standards and fostering independent intellectual advancement.

METHODOLOGY

This study adopted a qualitative research approach using content analysis to examine emerging themes related to ChatGPT in academic literature. Sources were gathered from Google Scholar using keywords such as "ChatGPT," "artificial intelligence," "higher education," "user adoption," and "ethical implications," focusing on peer-reviewed articles published between 2022 and 2024. Only English-language journal articles, conference papers, and conceptual studies were included, while duplicates and non-academic materials were excluded. Over 15,000 relevant articles were identified for analysis.

Following Komor and Grzyb (2023) procedures, each article was read and coded to extract meaningful units, which were then grouped into broader categories and interpreted to uncover conceptual linkages. This iterative process revealed key themes including technological usefulness, ethical considerations, educational integration, and user perceptions. Since the study relied solely on publicly available secondary data, ethical approval was not required, though all sources were properly cited to maintain academic integrity.

FACTORS INFLUENCING CHATGPT UTILISATION IN HIGHER EDUCATION AMONG STUDENTS

Performance Expectancy (PE)

Performance expectancy is the anticipated value derived from use in situations with uncertainty and high stakes realism driven by functional superiority of the technology (Sewandono et al., 2023). The construct of performance expectancy exerts a pronounced effect on the engagement with ChatGPT by university students, as it summarises their conviction that the utilization of this technology will augment their academic outcomes. This notion serves as a pivotal determinant of students' intentions to engage with ChatGPT, as evidenced by numerous investigations utilizing the UTAUT2 framework. PE has been recognized as the paramount variable when compared with others such as habitual usage and social influence, propelling students to incorporate ChatGPT into their academic practices owing to its anticipated advantages in learning efficacy and scholarly performance. The subsequent sections delve into the ramifications of PE, the moderating variables at play, and its interplay with additional influential factors.

PE emerges as the strongest predictor of students' intentions to engage with ChatGPT, surpassing other factors like habitual usage and social influence. This is supported by a robust correlation between students' belief in the tool's effectiveness and their actual usage behaviors, indicating that perceived usefulness significantly drives adoption (Li et al., 2024).

Besides that, PE plays a substantial role in shaping the behavioral intentions of university students regarding the utilization of ChatGPT, with male students demonstrating a more pronounced correlation than their female counterparts. This notion encapsulates students' perceptions that ChatGPT contributes positively to academic achievement, thereby encouraging its incorporation into their educational practices. Moreover, the field of study functions as a moderating variable in this context, as students

from the social sciences exhibit a more pronounced correlation between PE and the utilization of ChatGPT in comparison to their peers in applied sciences. Consequently, comprehending these moderating elements is essential for promoting the effective use of ChatGPT within the realm of higher education (Elshaer et al., 2024).

Furthermore, the expectation of performance markedly influences the behavioral intentions of university students regarding the utilization of ChatGPT, as demonstrated in the research findings. This factor emerges as the most consequential, indicating that students perceive the use of ChatGPT as a means to augment their academic efficacy. The investigation underscores a robust correlation between performance expectancy and actual utilization behaviors. Furthermore, familiarity with the website serves as a mediating variable in its association with intent, underscoring the imperative for artificial intelligence developers to engineer effective technologies that assist users in their scholarly pursuits (Benard et al., 2024). Moreover, academic integrity among students has the potential to influence the correlation between performance expectations and the utilization of ChatGPT, indicating that ethical factors might shape the perception of performance advantages (Bouteraa et al., 2024).

In conclusion, PE emerges as a pivotal determinant influencing university students' engagement with ChatGPT, exerting a profound impact on their behavioral intentions and actual utilization. This construct emphasizes students' conviction in the technology's capacity to augment academic outcomes, which subsequently propels its adoption. Moderating variables such as gender, field of study, and academic integrity further delineate this relationship, illuminating the intricate interplay of individual and contextual factors. Comprehending these dynamics is crucial for optimizing the incorporation of ChatGPT into educational methodologies and for developing AI tools that proficiently accommodate diverse academic requirements while fostering ethical usage.

Effort Expectancy (EE)

The effort expectancy is the degree of ease which a technology will convey to its users. It also includes the assumption that its usage will not entail diving into hardships or difficulties (Rizkalla et al., 2023). The implementation of ChatGPT within the realm of higher education not only introduces a plethora of opportunities but also presents a multitude of challenges, particularly in relation to the EE perceived by both students and educators alike. As an exceptionally sophisticated artificial intelligence tool, ChatGPT provides considerable advantages, which encompass the provision of personalized learning experiences that are achieved through meticulously tailored responses, thereby significantly enhancing both engagement and comprehension levels among learner (Kim, 2023).

Furthermore, it contributes to the overall efficiency in the generation of educational content, as it is capable of swiftly producing a diverse array of instructional materials that are designed to effectively support various academic tasks and endeavors (Archibald & Clark, 2023). In addition to these benefits, ChatGPT encourages students to engage in the critical appraisal of AI-generated content, prompting them to evaluate it in relation to their course materials, which ultimately cultivates the essential development of critical thinking skills that are imperative in academic settings (Archibald & Clark, 2023).

Nevertheless, the integration of this advanced technology raises significant ethical concerns, particularly those surrounding academic integrity, given the inherent risks associated with potential plagiarism and the improper use of AI-generated content, which collectively pose formidable challenges to the maintenance of established educational standards (Enriquez, et al., 2024)

Issues pertaining to reliability, such as the occurrence of inconsistent or inaccurate outputs, further complicate the broader adoption of this technology within educational frameworks (Bornmann & Lepori, 2024). In order to effectively address these multifaceted challenges, it is imperative that

educational institutions take proactive measures by implementing robust ethical guidelines accompanied by comprehensive training programs aimed at promoting responsible usage and mitigating any arising concerns regarding the technology's application (Enriquez et al., 2024).

Furthermore, it is crucial that the reliance on ChatGPT be judiciously balanced with conventional learning methodologies, in order to avert the potential pitfalls of overdependence on artificial intelligence, thereby ensuring the preservation of critical thinking skills and the core principles of academic integrity, which are integral to fostering a well-rounded and holistic educational experience for all students.

Social Influence (SI)

A person's behavior can be transformed by social influence which refers to the changes one makes after observing others either in solitary or in groups (Yu & Poger, 2022). The degree to which students embrace ChatGPT is profoundly influenced by the attitudes and behaviors exhibited by their peers. In instances where peers perceive the technology favorably and engage with it regularly, it is more probable that others will emulate this behavior, thereby exemplifying a manifestation of herd behavior (Benard et al., 2024).

The extent to which educational institutions furnish their students with comprehensive training and foster a heightened level of awareness regarding emerging technologies such as artificial intelligence can significantly impact their overall acceptance and receptivity towards these tools. Additionally, García-Alonso et al. (2024) mentioned that it is crucial to acknowledge that students who partake in specialized training programs dedicated to the functionalities and applications of ChatGPT may foster a more analytical and critical outlook, which can greatly impact their self-esteem and confidence in utilizing this groundbreaking tool in diverse situations.

As noted by Bhaskar et al. (2024), the comprehensive research undertaken elucidates that the phenomenon of social influence plays a pivotal and substantial role in shaping the intentions of educators to embrace and incorporate ChatGPT within the framework of higher education. This particular element serves as a reflection of the profound impact that the perspectives and actions of one’s peers and professional colleagues can exert on an individual’s cognitive decision-making processes regarding the implementation and utilization of ChatGPT as an educational tool. By acknowledging and understanding the critical significance of SI in this context, educational institutions are positioned to cultivate and promote a nurturing and supportive atmosphere that actively encourages and motivates teachers to seamlessly integrate ChatGPT into their pedagogical practices, thereby ultimately facilitating an increase in its adoption and effective utilization within various educational environments.

In their study, Abdaljaleel et al. (2024) highlights that the role of SI is critically essential in influencing the level of adoption of ChatGPT within higher education, a conclusion that is strongly reinforced by the thorough findings articulated in the investigation. Specifically, SI emerged as a pivotal factor that significantly contributes to the development of students' favorable attitudes and subsequent engagement with the utilization of ChatGPT. The research meticulously underscored the notion that the perceptions and behaviors exhibited by students towards ChatGPT are profoundly molded by the characteristics of their social environment, which encompasses the influences exerted by both their peers and their educators. This observation strongly implies that by actively cultivating a supportive social context, educational institutions can significantly facilitate and promote both the acceptance and the seamless integration of ChatGPT into academic frameworks, which, in turn, is likely to enhance the overall quality of the learning experience for students.

The research underscores the critical importance of SI in the adoption of ChatGPT within South

African higher education. Concerns about neutrality, critical thinking abilities, and the effects on employment contribute to institutional uncertainties surrounding AI adoption. Nevertheless, if managed with transparency, AI has the potential to enhance academic pursuits. Tarisayi (2024) recommends a flexible and ethical approach to integration that prioritizes human oversight and accountability, arguing that social dynamics and institutional policies must adapt to facilitate responsible AI utilization while upholding academic integrity and improving educational results.

Facilitating Conditions (FC)

Facilitating conditions are the availability of resources, support systems, and infrastructure which enable effective usage of a technology or strategy by the individuals (Mubuke et al., 2017). According to Alshammari & Alshammari (2024), FC denote users' perceptions regarding the accessibility of both technical and organizational resources necessary for the effective utilization of a technology. Within the framework of employing ChatGPT in tertiary education, FC exerts a significant impact on students' intentions to engage with the tool. The research revealed that when students recognize the presence of sufficient infrastructure and support, they exhibit a greater likelihood of intending to utilize ChatGPT. This finding corroborates prior investigations that assert FC as an essential determinant influencing technology adoption within educational contexts.

According to an investigation conducted by Salifu et al. (2024), FC play a crucial role in influencing students' actual utilization of ChatGPT within the realm of higher education. This determinant includes the array of resources, support systems, and infrastructural elements accessible to students, which empower them to proficiently engage with AI-driven tools such as ChatGPT. The research elucidates that when students recognize the presence of sufficient facilitating conditions, their propensity to interact with ChatGPT is heightened, consequently enriching their educational experience. This accentuates the necessity of furnishing essential support and resources within academic environments to foster the effective assimilation of AI technologies.

The investigation conducted by Sandu et al. (2024) explains that the enabling conditions for the utilization of ChatGPT in tertiary education encompass its capacity to furnish personalized and on-demand assistance, which is held in high regard by the student populace. The findings from the survey indicated that students value the adaptability and immediacy of ChatGPT, effectively addressing essential requirements within educational environments. Notwithstanding, obstacles such as a limited comprehension of intricate inquiries and a deficiency in human interaction were identified, signifying domains necessitating enhancement to augment the overall efficacy of ChatGPT in scholarly endeavours.

The research by Wang et al., (2023) examines the capacity of ChatGPT to improve facilitating conditions within the realm of higher education by functioning as a personalized assistant. Through the integration of ChatGPT with a conventional information retrieval chatbot framework, it effectively tackles challenges including the generation of inaccurate or biased responses. Empirical assessments suggest that this methodology possesses considerable potential for augmenting educational support and fostering enhanced learning environments in higher education contexts.

The study performed by Marron, (2023) emphasizes that ChatGPT can cultivate beneficial environments in higher education by generating resources and promoting collaborative. It accentuates the significance of incorporating artificial intelligence instruments such as ChatGPT into scholarly practices to amplify educational experiences.

FC play a crucial role in promoting the utilization of ChatGPT within the realm of higher education. The availability of resources, robust infrastructure, and comprehensive support mechanisms significantly enhance student engagement, thereby enriching their overall learning experiences. Although the personalized assistance provided by ChatGPT is highly regarded, challenges such as

limited query comprehension and diminished human interaction persist. The integration of artificial intelligence with conventional educational systems has the potential to mitigate these challenges. By fortifying FC, educational institutions can adeptly incorporate ChatGPT, thereby cultivating enhanced educational environments while judiciously balancing its advantages and drawbacks to achieve optimal outcomes.

DISCUSSION

The results of this investigation elucidate a sophisticated comprehension of the integration of ChatGPT within the realm of higher education, particularly through the prism of business ethics. Although PE assumes a predominant position, whereby students regard ChatGPT as an instrument for augmenting academic efficiency and output, its application engenders significant ethical dilemmas that are pivotal to the discourse of business ethics. To address this, institutions can implement AI usage workshops at the start of each semester, where students are guided on responsible use and ethical boundaries. These sessions should be embedded into orientation programs or core modules.

A primary concern pertains to academic integrity, a principle closely associated with the ethical value of honesty. The potential for students to excessively rely on ChatGPT may foster plagiarism or a deterioration in original thought and intellectual accountability. This scenario poses a challenge to the ethical underpinnings of higher education, where scholars are anticipated to engage in independent and critical reasoning. Consequently, educators and institutions must uphold ethical obligations by instituting clear policies that govern AI usage and reinforce ethical standards. This can be operationalized by updating academic honesty policies to explicitly include AI tools, and by requiring students to submit AI usage declarations alongside assignments. Faculty should also receive training on detecting AI-generated content and guiding students toward ethical engagement.

Concerning EE, while the user-friendliness of ChatGPT is regarded favorably, it may unintentionally diminish students' motivation to cultivate essential skills, such as writing and critical analysis. This undermines the ethical aspect of the duty of care ensuring that AI tools are not employed to circumvent meaningful learning experiences. Institutions bear a moral duty to provide ethical guidelines and training to ensure that students utilize AI tools as adjuncts rather than replacements for academic engagement. Practical steps include integrating AI-assisted writing tasks into coursework that require students to compare AI-generated drafts with their own revisions, fostering metacognitive reflection.

SI further exacerbates the ethical challenges. When prominent peers and educators advocate for the utilization of ChatGPT without addressing its ethical limitations, it may engender herd behavior that overlooks moral considerations. The notion of ethical leadership becomes paramount in this context educators must exemplify and promote responsible AI usage by establishing ethical benchmarks and fostering peer awareness. Social environments must cultivate a culture of transparency and accountability, in which the repercussions of unethical AI utilization are openly deliberated. Institutions can support this by forming AI ethics committees or student-led panels that host regular forums, debates, and campaigns on responsible AI use.

FC, including the presence or absence of supportive infrastructures and ethical training, significantly impact students' ethical consciousness. Institutions bear an ethical responsibility to construct equitable and inclusive environments, ensuring that all students have access to both the technology and the ethical acumen necessary for its appropriate use. An absence of ethical training results in inconsistent application of AI tools, potentially leading to unjust academic advantages, thereby violating the principle of fairness. To implement this, universities should embed AI literacy and ethics modules into general education curricula, and ensure that all students, regardless of background to have access to AI tools and support services

In consideration of the UTAUT2 framework, the interaction between technological convenience and ethical conduct must be deliberately managed. Ethical dimensions such as integrity, fairness, accountability, and respect must be integrated into every phase of ChatGPT incorporation, from training to policy formulation. Future strategies must harmonize innovation with the obligation to uphold business ethics values that maintain the credibility, trust, and moral purpose of educational institutions. This can be achieved by establishing cross-functional task forces—including ethicists, technologists, and educators—to co-design AI integration strategies.

The conceptual model is shown in Figure 1. Figure 1 presents a conceptual model adapted from UTAUT2, illustrating how key adoption factors interact with ethical dimensions in the context of ChatGPT use in higher education.

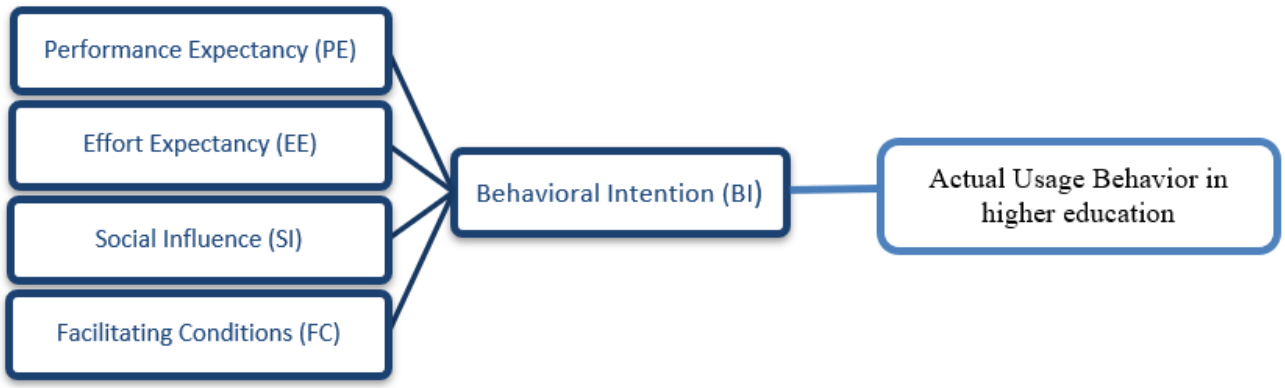

Figure 1. Conceptual Framework.

CONCLUSION

In conclusion, this study offers insights into the various factors that facilitate the use of ChatGPT, in particular, in higher education with an emphasis on enhancing one's academic experience while combining personalization of learning, improving efficiency, and providing support for critical thinking. The results highlight the following factors as critical in determining actual usage: PE, EE, SI and FC. Drawing from a qualitative analysis of over 15,000 peer-reviewed sources, performance expectancy was found to be the most influential factor, with a strong correlation between students' belief in ChatGPT's effectiveness and their actual usage behaviors. This study is important as it addresses the conflicting needs of taking advantage of ChatGPT while at the same time considering ethical and practical issues such as academic misconduct and excessive reliance on AI. Such information is important for educationists, institutions, and policy makers to design policies which utilize the potentials of ChatGPT while adhering to high education standards. In this regard, future studies need to focus on understanding AI's influence on learning efficacy in certain facets and the fitness of AI technology toward the advancement of cognitive abilities development within a wide range of cultural and organizational backgrounds to achieve fair and efficient margins of adoption.

CONFLICT OF INTEREST

The author has no conflicts of interest, whether financial or otherwise, in conducting this research.

ACKNOWLEDGEMENTS

This research is supported by grants from the Sultan Ahmad Shah Islamic University (UnIPSAS) (Project No. RUG-UnIPSAS-2024-10).

AUTHOR CONTRIBUTIONS STATEMENT

The authors jointly contributed to the conception, design, data collection, analysis, and preparation of this manuscript. The author also prepared, reviewed, and approved the final manuscript.

AVAILABILITY OF DATA AND MATERIALS

All data and materials used in this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Not applicable.

REFERENCES

Abdaljaleel, M., Barakat, M., Alsanafi, M., Salim, N. A., Abazid, H., Malaeb, D., Mohammed, A. H., Hassan, B. A. R., Wayyes, A. M., & Farhan, S. S. (2024). A multinational study on the factors influencing university students' attitudes and usage of ChatGPT. *Scientific Reports*, *14*(1), 1983.

Acosta-Enriquez, B. G., Arbulú Ballesteros, M. A., Arbulu Perez Vargas, C. G., Orellana Ulloa, M. N., Gutiérrez Ulloa, C. R., Pizarro Romero, J. M., Gutiérrez Jaramillo, N. D., Cuenca Orellana, H. U., Ayala Anzoátegui, D. X., & López Roca, C. (2024). Knowledge, attitudes, and perceived Ethics regarding the use of ChatGPT among generation Z university students. *International Journal for Educational Integrity*, *20*(1), 1–23. https://doi.org/10.1007/s40979-024-00157-4

Alshammari, S. H., & Alshammari, M. H. (2024). Factors Affecting the Adoption and Use of ChatGPT in Higher Education. *International Journal of Information and Communication Technology Education (IJICTE)*, *20*(1), 1–16.

Archibald, M. M., & Clark, A. M. (2023). ChatGTP: What is it and how can nursing and health science education use it? *Journal of Advanced Nursing*, *79*(10), 3648–3651. https://doi.org/10.1111/jan.15643

Benard, K., Moses, K., Arina, S., Jackson, A., & Leslie, O. A. (2024). Chatgpt Usage in Academia: Extending the Unified Theory of Acceptance and use of Technology with Herd Behavior. *International Journal of Social Science and Human Research*, *7*(07), 5213–5227.

https://doi.org/10.47191/ijsshr/v7-i07-69

Bhaskar, P., Misra, P., & Chopra, G. (2024). Shall I use ChatGPT? A study on perceived trust and perceived risk towards ChatGPT usage by teachers at higher education institutions. *The International Journal of Information and Learning Technology*, *41*(4), 428–447.

Bornmann, L., & Lepori, B. (2024). The use of ChatGPT to find similar institutions for institutional benchmarking. *Scientometrics*, *129*(6), 3593–3598. https://doi.org/10.1007/s11192-024-05039-7

Bouteraa, M., Bin-Nashwan, S. A., Al-Daihani, M., Dirie, K. A., Benlahcene, A., Sadallah, M., Zaki, H. O., Lada, S., Ansar, R., Fook, L. M., & Chekima, B. (2024). Understanding the diffusion of AI-generative (ChatGPT) in higher education: Does students' integrity matter? *Computers in Human Behavior Reports*, *14*(December 2023), 100402. https://doi.org/10.1016/j.chbr.2024.100402

Consuegra-Fernández, M., Sanz-Aznar, J., Burguera-Serra, J. G., & Caballero Molina, J. J. (2024). ChatGPT: The Dilemma of the Authorship of Graded Assignments in Higher-Education. *Revista de Investigacion Educativa*, *42*(2). https://doi.org/10.6018/rie.565391

Elshaer, I. A., Hasanein, A. M., & Sobaih, A. E. E. (2024). The Moderating Effects of Gender and Study Discipline in the Relationship between University Students' Acceptance and Use of ChatGPT. *European Journal of Investigation in Health, Psychology and Education*, *14*(7), 1981–1995. https://doi.org/10.3390/ejihpe14070132

Fecher, B., Hebing, M., Laufer, M., Pohle, J., & Sofsky, F. (2023). Friend or foe? Exploring the implications of large language models on the science system. *AI and Society*, *c*. https://doi.org/10.1007/s00146-023-01791-1

García-Alonso, E. M., León-Mejía, A. C., Sánchez-Cabrero, R., & Guzmán-Ordaz, R. (2024). Training and Technology Acceptance of ChatGPT in University Students of Social Sciences: A Netcoincidental Analysis. *Behavioral Sciences*, *14*(7). https://doi.org/10.3390/bs14070612

Goli-Cruz, M. J. (2023). Perceptions of Higher Education Faculty Regarding the Use of Chat Generative Pre-Trained Transformer (ChatGPT) in Education. *International Journal on Open and Distance E-Learning*, *9*(2).

Hultgren, C., Lindkvist, A., Özenci, V., & Curbo, S. (2023). ChatGPT (GPT-3.5) as an assistant tool in microbial pathogenesis studies in Sweden: a cross-sectional comparative study. *Journal of Educational Evaluation for Health Professions*, *20*, 1–5. https://doi.org/10.3352/jeehp.2023.20.32

Kim, T. W. (2023). Application of artificial intelligence chatbots, including ChatGPT, in education, scholarly work, programming, and content generation and its prospects: a narrative review. *Journal of Educational Evaluation for Health Professions*, *20*, 1–8. https://doi.org/10.3352/jeehp.2023.20.38

Komor, M., & Grzyb, K. (2023). Qualitative Content Analysis–A Research Method in Social Science. *Przegląd Badań Edukacyjnych (Educational Studies Review)*, *2*(43), 143–163.

Li, C., Yang, J., Zhang, H., Tian, L., Guo, J., & Yu, G. (2024). *Assessment of University Students' Behavioral Intentions to Use ChatGPT: A Comprehensive Application Based on the Innovation Diffusion Theory and the Technology Acceptance Model*. https://doi.org/10.20944/preprints202406.1835.v1

Marron, L. (2023). Exploring the potential of ChatGPT 3.5 in higher education: Benefits, limitations, and academic integrity. In *Handbook of research on redesigning teaching, learning, and assessment in the digital era* (pp. 326–349). IGI Global.

Mubuke, F., Kutosi Masaba, A., Ogenmungu, C., & Mayoka Kituyi, G. (2017). *Examining the Effect of Facilitating Conditions as an imperative input in enhancing the intention to use Mobile Learning systems in Universities*.

Nebieridze, M., & Jojua, N. (2024). Towards the Use of Artificial Intelligence (ChatGPT) in Higher Education: Students' Perspective. *Journal of Education in Black Sea Region*, *9*(2), 1–14.

Oliveira, E. (2019). Artificial intelligence: An overview. *Cutting Edge Technologies and Microcomputer Applications for Developing Countries*, 61–65.

Putra, F. W., Rangka, I. B., Aminah, S., & Aditama, M. H. R. (2023). ChatGPT in the higher education environment: perspectives from the theory of high order thinking skills. *Journal of Public Health*, *45*(4), e840–e841.

Rizkalla, N., Tannady, H., & Bernando, R. (2023). Analysis of the influence of performance expectancy, effort expectancy, social influence, and attitude toward behavior on intention to adopt live. on. *Multidisciplinary Reviews*, *6*.

Rohaizam, N. B. (2024). ChatGPT : Between Opportunities And Challanges In Increasing Academic Productivity ChatGPT : Antara Peluang Dan Tantangan Dalam Meningkatkan Produktivitas Akademik L. *Jurnal Perpustakaan Universitas Airlangga: Media Informasi Dan Komunikasi Kepustakawanan*, *14*(1), 54–60.

Salifu, I., Arthur, F., Arkorful, V., Abam Nortey, S., & Solomon Osei-Yaw, R. (2024). Economics students' behavioural intention and usage of ChatGPT in higher education: A hybrid structural equation modelling-artificial neural network approach. *Cogent Social Sciences*, *10*(1), 2300177.

Sandu, R., Gide, E., & Elkhodr, M. (2024). The role and impact of ChatGPT in educational practices: insights from an Australian higher education case study. *Discover Education*, *3*(1), 71.

Sewandono, R. E., Thoyib, A., Hadiwidjojo, D., & Rofiq, A. (2023). Performance expectancy of E-learning on higher institutions of education under uncertain conditions: Indonesia context. *Education and Information Technologies*, *28*(4), 4041–4068.

Sharma, K., Rahman, Z. T., & Rena, R. (2024). The ChatGPT: Its Influence on the Jobs Market—An Analytical Study. In *Data-Driven Modelling and Predictive Analytics in Business and Finance* (pp. 361–374). Auerbach Publications.

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*. https://doi.org/10.1080/10494820.2023.2209881

Tarisayi, K. S. (2024). ChatGPT use in universities in South Africa through a socio-technical lens. *Cogent Education*, *11*(1). https://doi.org/10.1080/2331186X.2023.2295654

Valadez, S. C. O., Mendoza, J. C. H., Villanueva-Hernandez, V., Tijerina, G., & Avila-Guzman, D. (2024). Languages With Artificial Intelligence Applications. In *Exploring Intersectionality and Women in STEM* (pp. 192–201). IGI Global.

Wang, K., Ramos, J., & Lawrence, R. (2023). ChatEd: a chatbot leveraging ChatGPT for an enhanced learning experience in higher education. *ArXiv Preprint ArXiv:2401.00052*.

Yu, S., & Poger, S. (2022). Using Matrix Operations to Measure Individual Social Influence in Mobile Messaging Apps. *2022 International Conference on Electrical, Computer and Energy Technologies (ICECET)*, 1–5.