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RESEARCH TITLE

Examining Faculty members' Adoption of ChatGPT in Libyan Higher Education: An Extended Unified Theory of Acceptance and Use of Technology

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Abstract

The study aimed to investigate the main predictors of ChatGPT adoption and use by Al-asmarya Islamic University faculty members in Libya as a developing country, faculty members of Al-asmarya university represents Libyan higher education users as an early adopters of AI technology tools, the study employed the Unified Theory of Acceptance and Use of Technology (UTAUT) as a theoretical framework to guide the findings. In addition, the study used quantitative approach as an instrument, the results of the study were based on 101 participants on the questionnaires, the findings of the study revealed that the four factors of UTAUT, along with three extended constructs represented in Self-Competence, AI Trust and AI Intelligence, can explain faculty members' engagement with ChatGPT.

Key Words: ChatGPT, ChatGPT adoption, Artificial Intelligence, UTAUT, educational context.

عنوان البحث

دراسة تقبُل أعضاء هيئة التدريس لإستخدام ChatGPT في التعليم العالي بليبيا: بإستخدام النظرية الموحدة لتقبل و إستخدام التقنية

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المستخلص

هدفت الدراسة إلى اختبار وتحديد العوامل الأساسية التي تؤثر على تقبل استخدام ChatGPT من قبل أعضاء هيئة التدريس بالجامعة الأسمرية الإسلامية في ليبيا كإحدى الدول النامية، حيث يمثل أعضاء هيئة التدريس بالجامعة الأسمرية أوائل المستخدمين لتقنيات وأدوات الذكاء الاصطناعي من شريحة المستخدمين بالتعليم العالي، اعتمدت الدراسة على نموذج (UTAUT)كإطار نظري لتحليل وبناء النتائج على أساسها واستخدمت الدراسة الاستبانة كأداة لجمع البيانات. تم جمع البيانات من مجتمع قصدي متمثلا في أعضاء هيئة التدريس، وعينة عشوائية مثلها 101 مشارك من أعضاء هيئة التدريس بالجامعة الأسمرية الإسلامية، خلصت النتائج إلى أن أربعة من العوامل الرئيسة بنموذج(UTAUT) بالإضافة إلى ثلاثة من العوامل الخارجية تمثل عوامل مهمة لتوضيح تقبل أعضاء هيئة التدريس لإستخدامChatGPT.

Introduction

AI (Artificial Intelligence) is currently being utilized in various sectors like education, business, healthcare, and management. The development of language models rooted in generative pre-trained transformers, such as ChatGPT, stands out as a major milestone in AI advancement (Ayoub et al., 2024).The increasing presence of generative AI technologies like ChatGPT prompts discussions about its impact on the field of education(Strzelecki, 2024), Different ways ChatGPT is utilized in education, particularly for creating assignments (Sullivan et al., 2023) (Ayoub et al., 2024). and aiding in the composition of essays. ((Crawford et al., 2023). Universities are evaluating the potential impact of ChatGPT on education, learning, and teaching in the forthcoming due to its wide-ranging possibilities that could be transformative. (Ayoub et al., 2024; Lim et al., 2023). Habibi et al (2023) mentioned that, Artificial Intelligence (AI) and natural language processing have had a profound influence on education, opening up new possibilities for creative teaching methods and learning experiences. ChatGPT has the ability to produce text resembling human speech and engage in interactive dialogue with users. it holds promise for enhancing educational practices by customizing content, assisting with assignments, and offering guidance to (Habibi et al., 2023;Lund & Wang, 2023).

The significant impact of ChatGPT on learning lies in its ability to produce personalized content, interactive learning opportunities, and individualized evaluations, thereby providing a more tailored approach to learning (Strzelecki, 2024). Integrating AI technologies like ChatGPT with traditional educational methods could create a dynamic learning environment that meets the distinct requirements and preferred learning styles of each student (Strzelecki, 2024). The potential of ChatGPT as an innovative tool to foster critical thinking, and develop creative problem-solving skills has recently been highlighted because it can provide individualized support that human educators may find difficult to provide due to specific constraints (Strzelecki, 2024). By assisting with activities like structuring and refining information, composing essays, and generating assessments from study materials, ChatGPT could play a crucial role in fostering more profound learning. Nevertheless, it is important to emphasize the ethical considerations, and the risk of excessive dependence on AI (Strzelecki, 2024). This underscores the significance of utilizing AI as a tool rather than a substitute for human educators, highlighting that human judgment and contextual comprehension are essential components of the educational process (Strzelecki, 2024).

(Alrayes et al., 2024) stated that Bansal and Chugh (2021) concur on the positive impact AI could have on education, exploring the potential application of GPT across different educational domains such as language acquisition, content generation, student evaluation, and individualized learning, several researchers, including Srinivasann & Padma(2021) and Kumarr and Bhattacharyae (2021) highlighted the benefits of GPT in education, particularly its ability to support personalized learning, they mention that GPT has the potential to aid in language translation, writing support, and customized learning (Alrayes et al., 2024). Alrayes et al (2024) confident that his proposed framework will enable faculty members to develop tailored content and assessments based on students' individual interests, and learning styles. As a result, students are expected to show increased engagement with the subject matter, as a consequence enhance their academic achievements (Alrayes et al., 2024).

Problem statement

Ayoub et al., (2024) mentioned that, Adeshola and Adepoju (2023) insisted on the continues growing utilization of ChatGPT in the future, and proposed that educational institutions should incorporate ChatGPT into their curriculum. The integration of ChatGPT in academic

settings is a recent development and requires further investigation to comprehend the factors affecting its adoption (Ayoub et al., 2024). In addition, Xu et al (2024) declared reduced attention given to AI technologies in academic research which implies that their adoption and resulting positive impacts in higher education (HEIs) are not yet fully grasped. Moreover, the study emphasized the importance of examining how AI technologies can be integrated into educational methods, as well as exploring faculty members' attitudes toward using AI technologies in their classrooms.

Menon, D., & Shilpa, K. (2023) refined that there is a lack of academic literature on the usage of ChatGPT in education, since this technology was only introduced in 2022(Deng & Lin, 2022). Previous research in education has indicated that providing users with technological resources does not always ensure the success of a system, as the value of services may not be realized. The utilization and acceptance of ChatGPT depend on various influencing factors. Due to its recent global launch, including in developing countries like Libya, there are still relatively few studies on the use and acceptance of ChatGPT in education(Menon & Shilpa, 2023; Lund & Wang, 2023; Deng & Lin, 2022; Sturgeon, 2021). Furthermore, faculty members as early adopters of a new technology, are often the first to encounter problems or issues, in order to identify and resolve these issues before they become spread (Menon & Shilpa, 2023; Eng & Quaia, 2009), their feedback can be invaluable. As a result, studying the acceptance and usage of faculty members as early adopters is critical (Menon & Shilpa, 2023).

Objective of the study

This research employed the Unified Theory of Acceptance and Use Technology (UTAUT) as a framework to investigate the factors influencing ChatGPT adoption, behavioral intention, and usage of Alasmarya's Islamic University faculty members as Libyan higher education institution in a developing country. The study was conducted using a quantitative approach. It involved distributing questionnaires using simple random sampling design, this approach enhances giving every participant in the population equal chance of being chosen from the targeted population, where the population of this study represent a purposive population. The collected data was analyzed using statistical methods and analytical software to test the hypothesis and draw conclusions. An online survey was utilized as the primary data collection method, with statistical analysis conducted using SPSS procedures (Habibi et al., 2023).

Significance of the study

This research makes significance critical contributions. It is one of the first studies to apply the (UTAUT) model in studying ChatGPT use in Libyan higher education context. Furthermore, The proposed model offers a thorough approach for analyzing the elements that impact the adoption and utilization of technology (Venkatesh et al., 2016; Verdegem & De Marez, 2011).This model has been selected for this study due to its extensive application in technology adoption research (Menon & Shilpa, 2023; Venkatesh, 2022) Secondly, This research offers a comprehensive examination of ChatGPT usage by exploring the impact of several (UTAUT) factors, including Performance expectancy, Social influence, Hedonic motivation, Intention to use and the Behavioral use of GPT. In addition, the study extended (UTAUT) factors by considering specific significant factors such as AI trust, AI intelligence and Self-efficacy based on the recommendations of previous literatures (Menon & Shilpa 2023). Ultimately, this study offers insights into the adoption and utilization of AI-based language models, The findings of this study can be used by ChatGPT developers to improve the model's functionality and design, as well as help the AI community gain a better understanding of how AI technologies are adopted and used. It also adds to the growing body of literature on AI technology adoption and usage (Menon & Shilpa, 2023).

Theoretical framework

The researchers in this study are employing the (UTAUT) model as a theoretical framework to guide their work. In 2003, Venkatesh and his colleagues Morris, Davis and Davis introduced the Unified Theory of Acceptance and Use of Technology. It is based on a number of established theories, such as the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the Theory of Planned Behaviour (TPB), and was created to explain and predict the factors that influence users' acceptance and use of technology. According to Menon and Shilpa (2023), This model's paradigm has been widely applied in research as well as practice to direct the creation and application technology innovations. The adoption and use of AI products by users can be understood using this paradigm (Menon & Shilpa, 2023; Venkatesh, 2022). The (UTAUT) model can be modified to include the specific characteristics of AI tools. in addition, the modification of model is critical to take into account the special qualities and potential of AI technologies (Menon & Shilpa, 2023). This approach has already been used to study new AI tools, including chatbots, virtual assistants (Valtolina et al., 2022), predictive analytics technologies (Raffaghelli et al., 2022) and recommendation systems (Y.-Y. Wang et al., 2015; Hasija & Esper, 2022; Venkatesh, 2022). It has been used to examine the impact of AI technologies on early adopters (Menon & Shilpa, 2023; Saari et al., 2022). By understanding the factors that affect early adopters, researchers can learn more about what motivates them to embrace new technologies and spot potential roadblocks. According to Habibi et al (2023), it considers a number of important variables that affect people's behavioral intentions and how they use certain modern technological systems. Moreover, (Kelly et al., 2023) confirmed the discussions of researchers on the predictors of (UTAUT) and their indication to the ability of these predictors to explain approximately 60-70% of the variance in behavioral intentions and use across various settings (Kelly et al., 2023; Taiwo & Downe, 2013).

(Dahri et al., 2024) reported that it has been widely used to investigate the factors influencing technology acceptance in different regions .For instance conducted a study in US (Joo & Choi, 2015), Saudi Arabia (Altwairesh, 2021), Pakistan (Rafique et al., 2020), Malaysia (AFigurel-Maatouk et al., 2020), Turkey (Afacan Adanır & Muhametjanova, 2021), Greece (Tzafilkou et al., 2021), Indonesia (Mailizar et al., 2021), South Korea (Yoon, 2016), (Dahri et al., 2024) mentioned that (UTAUT) includes vital components which enhances the goals of this study. Its predictive capability stems from its ability to link two important dimensions: the psychological, which includes behavioral goals, and the technical, which comprises usefulness assessment (Dahri et al., 2024; Al-Rahmi et al., 2019). To precisely identify the key factors influencing the utilization of ChatGPT in higher education, it is crucial to build a framework upon existing technology acceptance and adoption models, in the context of higher education, where AI applications like ChatGPT may exhibit unique characteristics compared to other information technology contexts, it is essential to consider factors such as the (UTAUT) when analyzing the adoption of such technologies (Dahri et al., 2024). However, despite these factors, ChatGPT is not widely popular among faculty members in higher education especially for Libyan educators, as a consequence, behavioral intention and use behavior are designed as the dependent variables in this model. The crucial factors in shaping a faculty member's intention to perform a specific behavior (behavioral intention), is shown in Fig. 1. Furthermore, External elements influencing how individuals perceive the helpfulness of ChatGPT are considered in this research model. These factors involve self-efficacy (Al-Rahmi et al., 2019),(Alamri et al., 2019), social influence(Alqahtani et al., 2022), AI trust (Kelly et al., 2023a), performance expectancy (Lodge et al., 2023),(Fishbein & Ajzen, 1977a), AI hedonic motivation (Joo & Choi, 2015),(Yoon, 2016), AI intelligence

(Lodge et al., 2023), (Yoon, 2016), (Joo & Choi, 2015). Numerous significant aspects impact faculty members' behavioral intention to utilize ChatGPT in the context of higher education (Al-Adwan, 2020), A fundamental aspect of the UTAUT model is behavioral intention, which underscores the significance of faculty members being willing and determined to incorporate ChatGPT into their teaching and learning processes(Lodge et al., 2023),(Molenaar, 2022). Self-efficacy, reflecting faculty members' self-perceived skills in adopting AI for teaching and learning, in thisccontext, the influence of colleagues, superiors, and other influential individuals, as represented by the UTAUT model, assumes significant importance alongside behavioral intention. where it was represented by the social influence factor (Joo & Choi, 2015), (Yoon, 2016),(Kizilcec et al., 2017). Furthermore, trust in AI systems is crucial in determining faculty members' confidence in the technology(Kelly et al., 2023a). Collectively, hedonic motivations of ChatGPT and their perception of AI intelligence significantly influence the adoption landscape, these factors are incorporated into the framework to provide a comprehensive explanation of the complex nature of AI tools adoption in learning and teaching practices within the Libyan educational context. The subsequent sections explore the development of the hypothesis that serve as the foundation for the research model(Dahri et al., 2024).

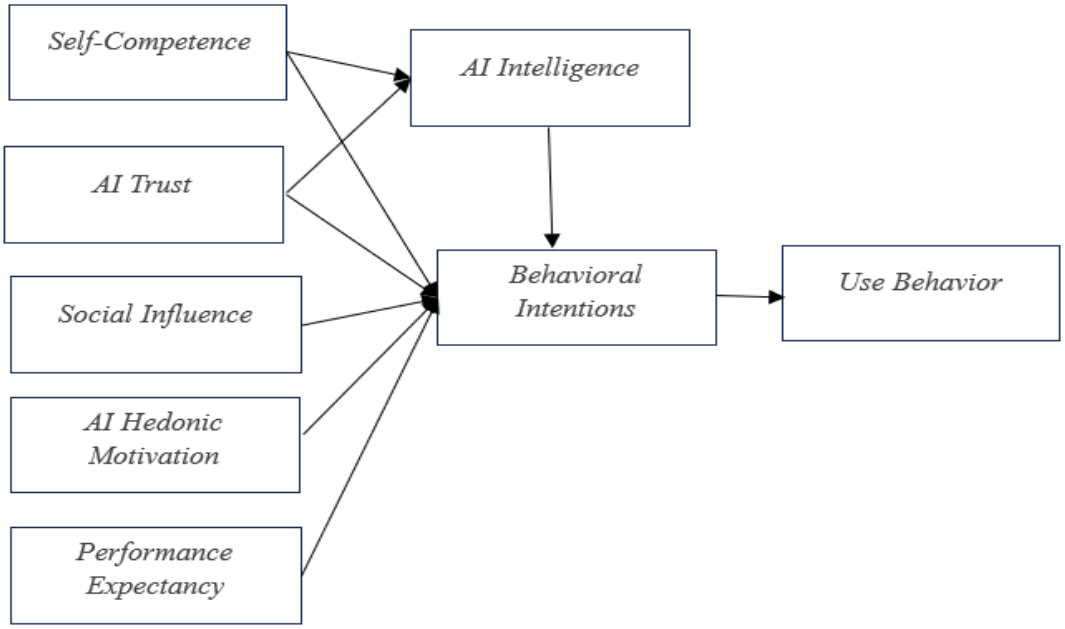

Figure1: Proposed Research Model

Hypotheses development

The use of AI technologies, such as ChatGPT, in educational settings is influenced by various factors. These factors have been defined according to the nature of the study, making them easy for investigators to understand. They involve the following: AI trust, self-efficacy, AI intelligence, AI hedonic motivation, AI performance expectancy, social influence, behavioral intention to use ChatGPT and finally the use behavior of ChatGPT. Collectively, these factors influence individuals' views on utilizing AI tool, to enhance learning activities, thereby controls their readiness to utilize AI chatbots(Dahri et al., 2024; Fishbein & Ajzen, 1977).

Self-Competence

Dahri et al (2024) defined Self-efficacy to be the belief of an individuals in their ability to

handle tasks and achieve goals. It is closely tied to their perception of their own abilities, expertise, and capabilities, It's about how confident and capable someone feels in managing and manipulating their own thoughts and cognitive processes(Al-Rahmi et al., 2019),(Alamri et al., 2019), a person with high competency is likely to view AI chatbots as a complement to their cognitive abilities, rather than a replacement, and approach them confidently. Bandura's self-efficacy theory emphasizes how an individual's beliefs in their own competence affect their perceptions of their ability to perform specific tasks. Kelly et al. (2023) conducted research and informed that, individuals exhibiting higher levels of self-efficacy are more receptive to utilizing AI technologies. thus, People's attitudes towards using ChatGPT are influenced by their perceptions of their own competence (Dahri et al., 2024) (Kelly et al., 2023a). People are more likely to have a favorable opinion of using AI tools when they have confidence in their own capabilities (Dahri et al., 2024), (C. Wang et al., 2023),(Venkatesh, 2022). Agarwal & Karahanna, (2000) opined that belief of individual's regarding an Information systems (IS) have a significant influence in their behavioral use, research study about (IS) adoption and utilization revealed that there is a positive relationship between SC and AI adoption (John, 2015).

H1 "self-efficacy positively influences behavioral intention toward using ChatGPT"

Social Influence

(Habibi et al., 2023) introduced Social Influence as the influence of external factors, such as collogues, educators, or societal relations, on an individual's decision to utilize AI tools, It is referred to as how the viewpoints of others, including family members and administrators, affect technology users' tendency to employ specific varieties of technology(Venkatesh, 2022b; Venkatesh & Davis, 2000); Wu et al., 2022). If people in their near vicinity support the usage of AI tools, users are more likely to accept them since they are influenced by their peer groups or educational environments. (Dahri et al., 2024) (Hasija & Esper, 2022). Researchers have found that social influence had a significant impact on behavior intention in the context of the application of AI, like robotics(Guggemos et al., 2020), and chatbot (Mohamed A. Ragheb et al., 2022), In a study conducted in German universities by Guggemos et al (2020), the study found a significant correlation between Social Influence and behavioral intention in the perspective of 462 students in relation to the acceptance and use of a humanoid robot called Pepper(Habibi et al., 2023). However, (Andrews et al., (2021) found that there was no significant relationship between these factors in AI-technologies utilization among librarians within American Higher Education Institutions (Habibi et al., 2023).

H2 "SI will significantly predict Libyan HEI faculty members' BI to use ChatGPT in teaching and learning practices".

AI Trust

The level of trust people have in AI technologies like ChatGPT is influenced by their perception of how trustworthy, reputable, and dependable these technologies are (Ayoub et al., 2024) (Raffaghelli et al., 2022), In the trust-commitment theory, trust is a fundamental factor, it arises when one side has faith in the dependability and truthfulness of the other side on a relationship(Morgan & Hunt, 1994). The modern technologies success is contingent upon the trust factor(Ayoub et al., 2024; Loh et al., 2021), when evaluating personal use, user behavior is impacted by essential role of trust (Brill et al., 2022). According to research, having trust in modern artificial intelligence (AI) methods may produce a number of positive aspects, such as improved perceptions of AI performance, and a higher propensity to make

purchases(Ayoub et al., 2024; Cheng et al., 2022; Yen & Chiang, 2021)). Mostafa & Kasamani (2022) discovered that trust in AI chatbots has a significant relation to usage intention Additionally, there is evidence that higher trust levels positively influence AI behavioral intention (Ayoub et al., 2024; Choung et al., 2022). According to Shin (2021) and Ayoub et al (2024), several trust dimensions play a role in a user's decision to interact with technology, but there is a lack of research on AI technologies. Moreover, Ayoub et al., 2024; Menon & Shilpa, 2023) emphasized the importance of considering trust as a factor when evaluating the adoption and usage of ChatGPT, as it can significantly influence the acceptance and usage of the technology. Therefore, the following hypotheses are proposed

H3 "There is a positive relationship between Trust and ChatGPT usage intentions".

Dahri et al., (2024) stated that consumer trust in technology is crucial for its adoption, according to the research on artificial intelligence (AI), and perceptions of AI's capabilities are influenced by the strong relationship between perceived AI intelligence and trust.(Ly & Ly, 2022). A person's attitude toward adopting ChatGPT can be determined by their impression of AI trust, as individuals who trust the AI tool are also more likely to be hopeful and open to integrating it into the educational process(Dahri et al., 2024).Based on that the following hypothesis is introduced

H4 "AI Trust is positively related to Perceived AI Intelligence".

AI intelligence

Dahri et al (2024)proposed that AI intelligence refers to the extent to which people believe that AI tools like ChatGPT are intelligent, capable of solving complicated issues(Lee et al., 2023), the underlying idea represents the user's perception of the AI instrument's ability to provide perceptive and intelligent support. (Balakrishnan & Dwivedi, 2024). AI intelligence is a component of usability and utility, it presents a significant role in shaping user attitudes and adoption, as indicated by research on AI and human interactions(Dahri et al., 2024; Tian & Wang, 2022). According to this concept, people's perceptions of AI intelligence are directly determined by their personal capabilities; persons who view ChatGPT and other AI solutions as being beneficial rather than concerning are considerably more inclined to firmly believe they are intelligent, the likelihood of someone using ChatGPT is directly influenced by their perception of AI intelligence, which means those who hold a positive view of AI are tend to involve it into educational processes(Dahri et al., 2024), therefore the following hypotheses are formulated.

H5 "self competence has a direct positive correlation with AI Intelligence"

H6 "AI Intelligence is positively correlated to behavioral intentions to use ChatGPT".

AI Hedonic motivation

Using a technology can bring about a sense of enjoyment or pleasure, and research has shown that this enjoyment has a significant impact on the intentions of users(Venkatesh et al., 2016). Strzelecki (2024) conducted research indicates that when users experience pleasure or enjoyment while using a technology, there is a higher probability that they will continue using it. In this situation, Hedonic Motivation refers to how much faculty members acknowledge that interacting with ChatGPT is pleasant and that they like exploring new technical tools.(Strzelecki, 2024b). Therefore, it is suggested that:

H7 "Hedonic motivation have a direct positive influence on the behavioral intention to use ChatGPT in higher education among faculty members."

Performance Expectancy

Venkatesh et al (2012) describe performance expectancy as a user's belief that using technology would be advantageous for accomplishing specific tasks, performance expectancy is a crucial external variable within the meta-UTAUT framework to better comprehend and explain behavior ((Alkhowaiter, 2022; Handayani, 2023) Furthermore, Dwivedi et al (2019)discovered that individual perspectives are influenced by the extent to which technology advantages them, several studies have investigated the relationship between performance expectancy and the intentions to use a technology. This phrase suggests that the more a technology is perceived to be valuable for user tasks, the more positive users' intentions are in using the technology (Handayani, 2023). When consumers believe that technology does not add worth to their tasks, they are less inclined to employ it, this suggests that performance expectancy has a substantial influence on user behavioral intention toward technology usage (Handayani, 2023). In response to the researcher's interest in understanding how behavioral intention and performance expectancy are connected, this research suggests the following hypothesis (Handayani, 2023).

H8 "behavioral intention is significantly influenced by performance expectancy".

Behavioral intention

Behavioral intentions (BI) is a pivotal construct in the examination of modern technology employment and actual use (Strzelecki, 2024; Ajzen, 1991; Fishbein & Ajzen, 1977b). Strzelecki (2024) stated that individuals' employment and utilization of a certain technology for a particular task or objective basically sourced from their readiness and intentions (Venkatesh et al., 2003, 2012). In this study, the researchers are examining the concept of BI (Behavioral Intention) to determine faculty members' willingness to incorporate ChatGPT into their academic tasks(Strzelecki, 2024; Venkatesh, 2022; Venkatesh & Davis, 2000). Habibi et al (2023) demonstrated that the relationship between intention and technology use has been examined in a number of previous studies(Raffaghelli et al., 2022; Cabrera-Sánchez et al., 2021; Gansser & Reich, 2021; Chatterjee & Bhattacharjee, 2020), according to their findings, BI has a significant influence on how AI technologies are actually used(Habibi et al., 2023;Cabrera-Sanchez ´ et al., 2021). The hypothesis as the following

H9 "suggests that Al-asmarya faculty members' intentions to use ChatGPT will have a direct positive influence on their actual use of the tool in higher education settings".

Use behavior

The concept of Use Behavior (UB) is employed to comprehend how users accept and utilize technology. (UTAUT) model states that actual use refers to how much a user actually uses a technology for a specific purpose, according to the model, it is predicted that the intention of users to use ChatGPT will positively predict their actual use behavior of the tool in higher education settings (Venkatesh et al., 2003). There exist a strong supportive correlation between expressing a strong intention to use technology and actually utilizing it which was stated previously in H9.

Methods

Instrumentation

Thirty-one items were initiated based on prior studies with a 5point Likert scale. Personal Competence, assessing efficacy in employment of AI, comprises eight items sourced from (Fishbein & Ajzen, 1977a; Habibi et al., 2023;Al-Rahmi et al., 2019; Dahri et al., 2024). Social Influence, determining the influence of external triggers, comprises four items adopted

from(Altalhi, 2021; Etikan, 2016). AI Trust, examines trustworthiness regarding AI technologies considering five items derived from (Kelly et al., 2023b), AI Hedonic Motivation evaluating individualized AI experiences, includes five components based on (Joo & Choi, 2015; Yoon, 2016). AI Intelligence, measuring perspectives regarding AI's cognitive capacities, is predicated on five factors sourced from (Ly & Ly, 2022), Performance Expectancy measuring the effect that GPT would make on the performance of the users has used two items from (Menon & Shilpa, 2023), and Behavioural Intention to use ChatGPT, investigating how individuals intend to utilize ChatGPT, which comprises three items taken from(Habibi et al., 2023; Hair et al., 2019). Meanwhile, use behaviour of ChatGPT contain two items based on (Abu-Taieh et al., 2022; Bozorgkhou, 2015; Wu & Lee, 2017).

Ensuring that it includes elements pertinent to the use of AI in the context of education. To guarantee content validity, the questionnaire's questions were carefully chosen from earlier studies. In addition, four educational technology specialists were asked to assess the items for the content validity procedure; revisions had been made based on their recommendations. The Cronbach's alpha method was used to evaluate the questionnaire's reliability, with a recommended cutoff point of > 0.7 (Mohd Dzin & Lay, 2021; Quiles, McCullough, & Piao, 2019; Ramu et al., 2023) was employed to measure its internal consistency(Meet et al., 2022). Each construct's final Cronbach's alpha values were higher than the cutoff, confirming the validity of the data for additional examination. SPSS was used to analyze the data, enabling the analysis of both descriptive and inferential statistics and yielding insightful participant information.

Eventually, the completed survey in Arabic was posted to Google Forms and disseminated by a random sample technique. Participants were asked to forward the survey to their peers, and additional distribution was encouraged. Survey participation was entirely voluntary. The demographic part, which included items to evaluate the following variables, as the following: Academic experience, specialization, degree, and qualification. The following two items were included in the subsequent section: The opening question was, "Have you heard of ChatGPT before?" selecting "yes" was necessary to proceed to the next question, while selecting "no" resulted in the submission of the survey. The following question was, "Have you used ChatGPT before?" selecting "yes" caused the presentation of all 31 UTAUT-based items, each item assessed on a 5-point Likert-scale with the following responses: strongly agree scored as 1, agree scored as 2, neutral/no opinion scored as 3, disagree scored as 4, and strongly disagree scored as 5, the survey was available starting from: June 2023 to September 2023. The final sample comprised 101 Al-asmarya's university faculty members.

Results and analysis

Demographics data analysis

The study of 101 participants (N = 101) information consisted of 5 (n=5) individuals qualified from bachelor's (5%) represented by teaching assistant at the university which represent (n=5) as shown by academic degree data. It can be noticed that 48(47.5%) of Al-asmaraya university faculty members qualified as Master's, 48(47.5) are qualified as PhD holders. In addition, 24(23.7%) of the population represent assistant lecturer, 24(23.7%) represent lecturer, 27(26.7%) are assistant professor, 14(13.8%) are associate professor, while 7(6.93%) are professors. Where, (p-value=0.002) indicates less than 0.05which highlights the importance of the items, as the responses of the participants shows it can be concluded that most of faculty members of the university are assistant professors, 45(44.6%) of the participants are specialized in applied sciences, 15(14.9%) medical sciences, 18(17.2%) humanities and 19(17.8%) economics. Moreover, the data indicated that 74(73.3%) are above

6 years' experience on teaching and academic practices. Furthermore, 79 % of the participants (n = 80) indicated familiarity with ChatGPT, as an instance of AI instrument, while 20 % (n = 21) revealed that they were unaware of ChatGPT. These demographic results shed light on the structure of the research sample, highlighting the qualification, academic degree, specialty distribution, academic experience. Table 1 reports the demographic data of the sample.

Table 1: Demographic Data of The Participants

Demographic Items	**Qualification**	total	**Academic degree**	total	**Specialty**	total	**Academic experience**	total
Participants								
	Bachelor's		Teaching assistant		Applied sciences		2-3 years	
	Masters		Assistant lecturer		Medical sciences		3-5 years	
	PHD		Lecturer		Social sciences		6 above	
			Assistant professor		Humanities sciences			
			Associate professor		Business & ecommerce			
			Professor					
Num of participants	5	101	5	101	45	101	19	101
	48		24		15		8	
	48		24		4		74	
			27		18			
			14		19			
			7					
Percent %	5%	%	5%	%	44.6%	%	18.8%	%
	47.5%		23.8%		14.9%		7.9%	
	47.5%		23.8%		5.5%		73.3%	
			26.7%		17.2%			
			13.9%		17.8%			
			6.9%					

Assessment of the research model

Survey stability test

In order to assess the stability of the constructs, after eliminating unnecessary signs, a reliability test was performed utilizing construct validity results. The Cronbach alpha Coefficient was used to assess the consistency of the survey responses for each category of indicators. Reliability calculations of the multi-items scales showed very favorable results. It is noteworthy that the constructs continuously showed strong internal consistency and dependability, as seen by Cronbach's alpha values between(0.75 and 0.95). Strong internal consistency is confirmed by these results, which are above the suggested cutoff of 0.7. (Alhwaiti, 2023; Meet et al., 2022). Results of the reliability analysis are shown in Table 2.

Table 2: Reliability Results

Construct	Items	Cronbach's alpha	Interpretation
Behavioral Intention	3	0.882	Good
Self -Competence	8	0.846	Good
Performance Expectancy	2	0.925	Good
Social Influence	4	0.804	Good
AI Intelligence	5	0.902	Good
AI-Hedonic Motivation	3	0.905	Good
AI Trust	4	0.881	Good
Use Behavior	2	0.87	Good
	31	0.958	Very Good

Descriptive analysis (mean, SD)

The participant's assessments of self-competence , social influence, AI Trust, AI Performance Expectancy, AI Hedonic motivation, AI intelligence towards ChatGPT, and intention to use ChatGPT were largely positive, according to the mean and standard deviation (SD) analysis of the questionnaire items. Table 3 presents Mean and SD results. In particular, mean ratings above 4.0 showed that participants had high levels of trust, personal competency, and Performance Expectancy of AI. Although, general trends were good, the participant group's varied reactions were suggested by the moderate heterogeneity in SD results. These results highlight participants' generally favorable attitudes toward ChatGPT.

Table 3: Mean and SD Results

Construct	Item	Mean	SD
Self-competence	SC1	4.12	0.97
	SC2	4.06	0.98
	SC3	4.08	1.14
	SC4	3.96	0.97
	SC5	3.94	0.94
	SC6	3.98	0.93
	SC7	3.99	0.98
	SC8	3.95	1.14
Performance Expectancy	PE1	4.03	0.94
	PE2	4.11	0.97
Social Influence	SI1	4.02	0.94
	SI2	3.95	1.01
	SI3	3.93	1.05
	SI4	3.99	1.02
AI-Intelligence	AII1	4.05	01.0
	AII2	4.01	1.07
	AII3	4.05	1.01
	AII4	4.16	1.02
	AII5	3.97	0.97
AI-Hedonic Motivation	HM1	4.05	0.90
	HM2	4.07	1.05
	HM3	3.94	1.05
AI-Trust	AIT1	0.41	1.01
	AIT2	4.05	0.94
	AIT3	4.19	01.0
	AIT4	3.95	1.01
Behavioral Intention	BI1	4.07	0.96
	BI2	4.11	01.0
	BI3	4.17	0.94
Use Behavior	UB1	4.18	0.97
	UB2	4.17	0.91

Hypotheses testing

The study tested several hypotheses to explain and elaborate interaction of the predictors influencing the acceptance of ChatGPT as AI technology for educational purposes at a developing country like Libya. The findings, as presented in Table 4, Significant findings on the connections between the different constructs in the model were obtained from the hypothesis testing results. BI, PE, SC, AIT, AII, and HM were among the hypotheses that received a lot of support, demonstrating their importance in the acceptance and implementation of ChatGPT.

including H1, H2, H3, H4, H5, H6, and H7, indicating their significance in shaping ChatGPT technology adoption. In these instances, the behavioral intention to use ChatGPT technology (BI) were discovered to be strongly affected by constructs such as Self-Competence (SC), Social Influence (SI), AI Trust (AIT), Performance Expectancy (PE), AI Hedonic motivation (HM), and AI Intelligence (AII). **H1:** Self Competence (SC) positively affects ChatGPT Technology Behavioral Intention (BI) ($p = 0.000$), confirming this theory. This implies that faculty members' acceptance of AI technology for instruction is significantly influenced by their own belief in competency. Furthermore, SC could explain

62.1%(R^2=0.621) of the changes on BI .**H2:** Social Influence (SI) positively affects the user's intention to adopt ChatGPT as AI technology (BI) (p = 0.000) SI could explain 50.9%(R^2=0.509) of the changes on BI, promoting this hypothesis. It suggests that peers and colleagues strongly formulate faculty members' assessments of ChatGPT's utilization in educational settings and practices, emphasizing social influence's prominence in faculty members' AI modern technology acceptance. This result confirms the theory. **H3** and **H4** show that AI Trust (AIT) favorably impacts AI Intelligence (AII) (p = 0.000) and Intention to use GPT (BI) (p = 0.000), confirming both hypotheses. These hypotheses have demonstrated how educators' intentions to use ChatGPT in the classroom are influenced by their level of faith in AI. Trust affects Al-asmarya faculty members' technology uptake and deployment. AIT could explain 66.5%(R^2=0.665) of the changes on AII. Moreover, AIT could explain 70.1%(R^2=0.701) of the changes on BI. **H5:** Al-asmarya faculty members' assessments of AI's intelligence positively affected by Self- competence (SC) (p = 0.000). Demonstrating that the support is favorable for this hypothesis. SC could explain 59.2%(R^2=0.592) of the changes on AII. **H6:** Al-asmarya faculty members' assessments of AI's intelligence positively impacts Intentions toward utilizing ChatGPT (BI) (p = 0.000). Support is high for this hypothesis. AII could explain 62.1%(R^2=0.621) of the changes on BI. **H7:** Faculty memebers' Hedonic Motivation of AI technology represented in ChatGPT favorably increases their Intention towards using it (BI) (p = 0.000). This hypothesis has considerable amount of support. Where, HM could clarify 53.5%(R^2=0.535) of the changes on BI. **H8:** Performance Expectancy (PE) positively increases participants intention towards using GPT (p = 0.000), highlighting educators' influence on BI. Support is considered strong for this hypothesis. Besides, PE illuminate 79.6%(R^2=0.796) of the changes on BI. **H9:** Behavioral Intention to use ChatGPT (BI) positively correlates the use behavior which reflects the actual use of ChatGPT (UB) (p = 0.000). support is considered very strong for this concept. BI could illuminate 78.1%(R^2=0.781) of the changes on UB.

Regression analysis has been used to indicate the effects of the independent variables (IVs) on all the dependent variables(DVs). The Pearson bivariate the sample correlation coefficient (r), which is the result of correlation, quantifies the direction and strength of linear relationships between the variable pairs. Moreover, r-squared test had been carried out to show how well the data fit the regression model, Table4 reports the findings of the model's path coefficients' significance testing as well as the outcomes of the hypothesis verification.

Table 4: Hypotheses testing results

Hypotheses	Path	Path coefficient	R-squared	Significance at P< .05
1	SC—>BI	0.788	0.621	Yes
2	SC—>AII	0.770	0.592	Yes
3	AIT—>AII	0.602	0.665	Yes
4	AIT—>BI	0.681	0.701	Yes
5	PE—>BI	0.726	0.796	Yes
6	SI—>BI	0.596	0.509	Yes
7	HM—>BI	0.731	0.535	Yes
8	AII—>BI	0.633	0.621	Yes
9	BI—>UB	0.500	0.781	Yes

Discussion

This study enhances the concepts regarding faculty members' perceptions of ChatGPT's utilization in educational context. Although prior studies on this subject had been considered as scarce, especially in higher education(Strzelecki,. 2024), results of this study provide considerable significance for enhancing discussions on the adoption of AI Chatbots as

instrument in academic settings. the (UTAUT) theory had been utilized to examine the acceptance and deployment of ChatGPT, with external constructs satisfying the standards for validity and reliability. Specifically, the study confirms that (Strzelecki, 2024) Self-competence , AI Trust, AI Intelligence, Performance Expectancy, Hedonic Motivation and Social Influence , positively correlated with Behavioral Intention to use ChatGPT , PE has the highest effect on BI as the results of the study revealed, which also founded by prior Literatures regarding AI utilization in education (Strzelecki, 2024; Habibi et al., 2023; Alhwaiti, 2023; Andrews et al., 2021; Chatterjee & Bhattacharjee, 2020; Guggemos et al., 2020; Raffaghelli et al., 2022; Wu et al., 2022). The significant correlation between PE and BI could be justified to HEI faculty members' perspectives that ChatGPT positively influence learning and teaching efficiencies (Habibi et al., 2023). These findings are guidance for faculty members in HEIs across the world to utilize ChatGPT as a tool for supporting their performance in learning and teaching practices. Hedonic motivation HM also notably related to faculty members' intention to use ChatGPT; previous studies have reported similar results with AI systems as the goal of their studies (Habibi et al., 2023 ;Arain et al., 2019; Azizi et al., 2020; Gharrah et al., 2021; Tseng et al., 2022). Furthermore, this result is consistent with literatures on the deployment of modern technologies in higher education, just to mention, Google Classroom (Kumar & Bervell, 2019), mobile technologies (Hu et al., 2020), and blended learning (Azizi et al., 2020). However, these findings contradict those of studies such as: (Ain et al., 2016; Raza et al., 2022). In addition, Strzelecki stated "One of the key components of ChatGPT's efficacy is enjoyment. When learners are truly interested, inspired, and amused, learning becomes a joyful experience." (Strzelecki,. 2024).

Even though it is one of the bases of (UTAUT), Social influence has a lower relation with the Behavioral intention to use ChatGPT contradicting it to other constructs. Early users are more likely to embrace AI chat tools, those adapters usually have a higher education level and are less vulneraries of external pressures (Strzelecki,. 2024). The findings of current study found low social pressure on the adoption of ChatGPT, potentially, the finding could be justified to the fact that ChatGPT is a modern technology hasn't been extensively embraced, Prior studies reported SI to have a significant positive correlation with BI(El-Masri & Tarhini, 2017; Kang et al., 2015), while others revealed a results consistent with this study, such as (Strzelecki, 2024; Kumar et al., 2019).

Furthermore, the study revealed that the use of ChatGPT in the teaching and learning process is preceded by self-competence and AI trust. Faculty members' use and deployment of AI technologies are influenced by their self-perceptions of competence. Previous as well as recent researches supported personal efficacy on ChatGPT acceptance. Therefore, higher self-competence can increase the acceptance of a technology while lower self-competence can negatively impact it (Alharbi & Drew, 2019; Dahri et al., 2024; Park et al., 2006). Besides, Trust is a significant construct to technology adoption, as reported in the literature and consistent with studies (Dahri et al., 2024; Raffaghelli et al., 2022; Y.-Y. Wang et al., 2015).

The results of the study also revealed that self-competence has a significant relation with AI Intelligence which is consistent with the finding of studied such as(Dahri et al., 2024). In addition, Trust was found to be significantly correlated to AI intelligence (Dahri et al., 2024).

The results of this study reported a positive correlation between AI Trust and behavioral intentions contradicts (Pitardi & Marriott, 2021) result which revealed that trust did not affect intentions towards using ChatGPT. However, prior researchers indicated the significance of trust specifically when utilizing AI (Davenport et al., 2020; J. Wang et al., 2020). Moreover, (Loh et al., 2021; Silva et al., 2023) reported the significant impact of trust on users'

behavioral intention This finding confirms the proposed model in considering trust as one of the important factors to consider when using artificial intelligent systems (Ayoub et al., 2024).

The survey data reported that AI intelligence AII positively correlated to behavioral intentions BI this finding supported by prior studies(Lee et al., 2023), indicating that faculty members' opinions of AI's intelligence impact their adoption of AI tools(Dahri et al., 2024).

Finally, this study revealed behavioral intention BI as the most Crucial construct of use behavior UB. Whenever intention of users is positive, they would increase ChatGPT use in their learning. majority of prior studies involving BI to influence use reported a similar phenomenon (Cabrera-Sánchez et al., 2021; Chatterjee & Bhattacharjee, 2020; Gansser & Reich, 2021; Habibi et al., 2023; Raffaghelli et al., 2022).

Theoretical implications

Theoretically, the results of the study could expand the employment of the UTAUT model. particularly, the survey instrument can serve as a source to future researchers interested in studying and investigating artificial intelligence applications utilization. The study results enhance the advancement of theoretical discussions on the role of AI tools deployment in the educational context, and the requirement for proposing frameworks that examine the various aspects of AI integration in high education practices.

Practical implications

The study introduces precious discernment for diverse stakeholders in higher education the identified predictors provide practical guidance for faculty members, educational institutions, and AI system's developers planning to improve the utilization and integration of AI tools. In addition, recognizing these predictors is significant for refining the deployment of ChatGPT in high education context standardizing its services with the various objectives of faculty members. The study highlights the importance of understanding the identified predictors and upgrading its potential to enhance the educational involvement through expanding motivation underscores ChatGPT's supportive role in constructing productive learning environments.

Conclusion

This study examined Al-asmarya university's faculty members perspectives of AI- tools, specifically ChatGPT. AI tools have the potential to enhance teaching methods and boost student learning outcomes. The study sought to investigate faculty members' views and utilization of ChatGPT, an area that had not been extensively studied. Using quantitative approach, insights had been gathered from the participants. based on the Unified Theory of Acceptance and Use of Technology Model (UTAUT), the data highlighted that Al-asmarya university's faculty members accepted ChatGPT as a tool supporting pedagogy. Furthermore, the study confirmed the significant role of. Individual competencies, hedonic motivation, and several AI-predictors were key factors. Ultimately, this study enhances teaching methods and practices through highlighting the importance of AI technologies particularly ChatGPT, high education. faculty members and educational institutions have a significant role in emphasizing the demand for self-competency, and the necessity for the development of trust, it makes incorporation of AI technologies in teaching practices and preparation programs easier. The method used in this study also provides a novel viewpoint to future research, it offers an exceptional chance for education and instruction, establishing a foundation for future research and highlighting the exciting potential of integrating AI technology into higher education.

Limitations and future work

Like any research, this study has several limitations. Firstly, the current study employed a quantitative methodology, implying the requirement for a qualitative approach in the future research, perhaps with the same constructs defined in this study. Second, the study was conducted in a particular country, i.e. Libya, which could restrict the applicability of the findings, future research could examine and investigate the factors affecting the usage of ChatGPT in divergent contexts in multiple cultural environments. Finally, the study did not investigate other constructs influencing users' intentions to use ChatGPT, for instance perceived risk, personal innovativeness and perceived control, researcher could use different constructs in studying the predictors of ChatGPT adoption. All in all, evaluations of ChatGPT's effect on academic achievements, will produce a remarkable effect.

References

Adeshola, I., & Adepoju, A. P. (2023). The opportunities and challenges of ChatGPT in education. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2023.2253858

Afacan Adanır, G., & Muhametjanova, G. (2021). University students' acceptance of mobile learning: A comparative study in Turkey and Kyrgyzstan. *Education and Information Technologies*, *26*(5), 6163–6181. https://doi.org/10.1007/S10639-021-10620-1/TABLES/5

Ain, N., Kaur, K., & Waheed, M. (2016). The influence of learning value on learning management system use. *Information Development*, *32*(5), 1306–1321. https://doi.org/10.1177/0266666915597546

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Al-Adwan, A. S. (2020). Investigating the drivers and barriers to MOOCs adoption: The perspective of TAM. *Education and Information Technologies*, *25*(6), 5771–5795. https://doi.org/10.1007/S10639-020-10250-Z/METRICS

Alamri, M. M., Al-Rahmi, W. M., Yahaya, N., Al-Rahmi, A. M., Abualrejal, H., Zeki, AkramM., & Al-Maatouk, Q. (2019). Towards Adaptive E-Learning among University Students: by Applying Technology Acceptance Model (TAM). *International Journal of Engineering and Advanced Technology*, *8*(6s3), 270–276. https://doi.org/10.35940/ijeat.F1043.0986S319

Alharbi, S., & Drew, S. (2019). The Role of Self-efficacy in Technology Acceptance. *Advances in Intelligent Systems and Computing*, *880*, 1142–1150. https://doi.org/10.1007/978-3-030-02686-8_85

Alhwaiti, M. (2023). Acceptance of Artificial Intelligence Application in the Post-Covid Era and Its Impact on Faculty Members' Occupational Well-being and Teaching Self Efficacy: A Path Analysis Using the UTAUT 2 Model. *Applied Artificial Intelligence*, *37*(1). https://doi.org/10.1080/08839514.2023.2175110

Alkhowaiter, W. A. (2022). Use and behavioural intention of m-payment in GCC countries: Extending meta-UTAUT with trust and Islamic religiosity. *Journal of Innovation & Knowledge*, *7*(4), 100240. https://doi.org/10.1016/J.JIK.2022.100240

Al-Maatouk, Q., Othman, M. S., Aldraiweesh, A., Alturki, U., Al-Rahmi, W. M., & Aljeraiwi, A. A. (2020). Task-technology fit and technology acceptance model application to structure and evaluate the adoption of social media in academia. *IEEE Access*, *8*, 78427–78440. https://doi.org/10.1109/ACCESS.2020.2990420

Alqahtani, M. A., Alamri, M. M., Sayaf, A. M., & Al-Rahmi, W. M. (2022). Exploring student satisfaction and acceptance of e-learning technologies in Saudi higher education. *Frontiers in Psychology*, *13*, 939336. https://doi.org/10.3389/FPSYG.2022.939336/BIBTEX

Al-Rahmi, W. M., Yahaya, N., Aldraiweesh, A. A., Alamri, M. M., Aljarboa, N. A., Alturki, U., & Aljeraiwi, A. A. (2019). Integrating Technology Acceptance Model with Innovation Diffusion Theory: An Empirical Investigation on Students' Intention to Use E-Learning Systems. *IEEE Access*, *7*, 26797–26809. https://doi.org/10.1109/ACCESS.2019.2899368

Alrayes, A., Henari, T. F., & Ahmed, D. A. (2024). ChatGPT in Education – Understanding the Bahraini Academics Perspective. *Electronic Journal of E-Learning*, *22*(2), 112–134. https://doi.org/10.34190/ejel.22.2.3250

Altalhi, M. (2021). Toward a model for acceptance of MOOCs in higher education: the modified UTAUT model for Saudi Arabia. *Education and Information Technologies*, *26*(2), 1589–1605. https://doi.org/10.1007/s10639-020-10317-x

Altwairesh, R. M. (2021). Mobile Payments from Merchants' Perspective: An Empirical Study Using the TAM Model in Saudi Arabia. *International Journal of Computer Science & Network Security*, *21*(8), 317–326. https://doi.org/10.22937/IJCSNS.2021.21.8.41

Andrews, J. E., Ward, H., & Yoon, J. W. (2021). UTAUT as a Model for Understanding Intention to Adopt AI and Related Technologies among Librarians. *The Journal of Academic Librarianship*, *47*(6), 102437. https://doi.org/10.1016/J.ACALIB.2021.102437

Ayoub, D., Metawie, M., & Fakhry, M. (2024). AI -ChatGPT Usage Among Users: Factors Affecting Intentions to Use and the Moderating Effect of Privacy Concerns. *MSA-Management Sciences Journal*, *0*(0), 120–152. https://doi.org/10.21608/msamsj.2024.265212.1054

Azizi, S. M., Roozbahani, N., & Khatony, A. (2020). Factors affecting the acceptance of blended learning in medical education: application of UTAUT2 model. *BMC Medical Education*, *20*(1), 1–9. https://doi.org/10.1186/S12909-020-02302-2/FIGURES/2

Balakrishnan, J., & Dwivedi, Y. K. (2024). Conversational commerce: entering the next stage of AI-powered digital assistants. *Annals of Operations Research*, *333*(2–3), 653–687. https://doi.org/10.1007/S10479-021-04049-5/FIGURES/5

Brill, T. M., Munoz, L., & Miller, R. J. (2022). Siri, Alexa, and other digital assistants: a study of customer satisfaction with artificial intelligence applications. *The Role of Smart Technologies in Decision Making*, 35–70. https://doi.org/10.4324/9781003307105-3

Cabrera-Sánchez, J. P., Villarejo-Ramos, Á. F., Liébana-Cabanillas, F., & Shaikh, A. A. (2021). Identifying relevant segments of AI applications adopters – Expanding the UTAUT2's variables. *Telematics and Informatics*, *58*, 101529. https://doi.org/10.1016/J.TELE.2020.101529

Chatterjee, S., & Bhattacharjee, K. K. (2020). Adoption of artificial intelligence in higher education: a quantitative analysis using structural equation modelling. *Education and Information Technologies*, *25*(5), 3443–3463. https://doi.org/10.1007/S10639-020-10159-7/TABLES/6

Cheng, X., Zhang, X., Cohen, J., & Mou, J. (2022). Human vs. AI: Understanding the impact of anthropomorphism on consumer response to chatbots from the perspective of trust and relationship norms. *Information Processing & Management*, *59*(3), 102940. https://doi.org/10.1016/J.IPM.2022.102940

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

Dahri, N. A., Yahaya, N., Al-Rahmi, W. M., Aldraiweesh, A., Alturki, U., Almutairy, S., Shutaleva, A., & Soomro, R. B. (2024). Extended TAM based acceptance of AI-Powered ChatGPT for supporting metacognitive self-regulated learning in education: A mixed-methods study. *Heliyon*, *10*(8). https://doi.org/10.1016/J.HELIYON.2024.E29317/ATTACHMENT/627BF05F-B6DA-4E13-A660-587B7EAB257F/MMC1.DOCX

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, *48*(1), 24–42. https://doi.org/10.1007/s11747-019-00696-0

Deng, J., & Lin, Y. (2022). The Benefits and Challenges of ChatGPT: An Overview. *Frontiers in Computing and Intelligent Systems*, *2*(2), 81–83. https://doi.org/10.54097/FCIS.V2I2.4465

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Information Systems Frontiers*, *21*(3), 719–734. https://doi.org/10.1007/S10796-017-9774-Y/TABLES/1

El-Masri, M., & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*, *65*(3), 743–763. https://doi.org/10.1007/s11423-016-9508-8

Eng, T.-Y., & Quaia, G. (2009). Strategies for improving new product adoption in uncertain environments: A selective review of the literature. *Industrial Marketing Management*, *38*(3), 275–282. https://doi.org/10.1016/j.indmarman.2008.01.003

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Fishbein, M., & Ajzen, I. (1977a). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. https://philpapers.org/rec/FISBAI?all_versions=1

Fishbein, M., & Ajzen, I. (1977b). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. https://philpapers.org/rec/FISBAI?all_versions=1

Gansser, O. A., & Reich, C. S. (2021). A new acceptance model for artificial intelligence with extensions to UTAUT2: An empirical study in three segments of application. *Technology in Society*, *65*, 101535. https://doi.org/10.1016/J.TECHSOC.2021.101535

Guggemos, J., Seufert, S., & Sonderegger, S. (2020). Humanoid robots in higher education: Evaluating the acceptance of Pepper in the context of an academic writing course using the UTAUT. *British Journal of Educational Technology*, *51*(5), 1864–1883. https://doi.org/10.1111/BJET.13006

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/10.1016/j.caeai.2023.100190

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the

results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203/FULL/XML

Handayani, W. P. P. (2023). The UTAUT Implementation Model in Defining the Behavioral Intention of Mobile Banking Users. *Jurnal Manajemen Bisnis*, *14*(2), 361–377. https://doi.org/10.18196/mb.v14i2.18649

Hasija, A., & Esper, T. L. (2022). In artificial intelligence (AI) we trust: A qualitative investigation of AI technology acceptance. *Journal of Business Logistics*, *43*(3), 388–412. https://doi.org/10.1111/jbl.12301

John, S. P. (2015). The integration of information technology in higher education: A study of faculty's attitude towards IT adoption in the teaching process. *Contaduría y Administración*, *60*, 230–252. https://doi.org/10.1016/j.cya.2015.08.004

Joo, S., & Choi, N. (2015). Factors affecting undergraduates' selection of online library resources in academic tasks usefulness, ease-of-use, resource quality, and individual differences. *Library Hi Tech*, *33*(2), 272–291. https://doi.org/10.1108/LHT-01-2015-0008/FULL/XML

Kang, M., Liew, B. Y. T., Lim, H., Jang, J., & Lee, S. (2015). Investigating the Determinants of Mobile Learning Acceptance in Korea Using UTAUT2. *Lecture Notes in Educational Technology*, *9783662441879*, 209–216. https://doi.org/10.1007/978-3-662-44188-6_29

Kelly, S., Kaye, S.-A., & Oviedo-Trespalacios, O. (2023a). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics*, *77*, 101925. https://doi.org/10.1016/j.tele.2022.101925

Kelly, S., Kaye, S.-A., & Oviedo-Trespalacios, O. (2023b). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics*, *77*, 101925. https://doi.org/10.1016/j.tele.2022.101925

Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education*, *104*, 18–33. https://doi.org/10.1016/J.COMPEDU.2016.10.001

Kumar, J. A., & Bervell, B. (2019). Google Classroom for mobile learning in higher education: Modelling the initial perceptions of students. *Education and Information Technologies*, *24*(2), 1793–1817. https://doi.org/10.1007/s10639-018-09858-z

Lee, J. C., Tang, Y., & Jiang, S. Q. (2023). Understanding continuance intention of artificial intelligence (AI)-enabled mobile banking applications: an extension of AI characteristics to an expectation confirmation model. *Humanities and Social Sciences Communications 2023 10:1*, *10*(1), 1–12. https://doi.org/10.1057/s41599-023-01845-1

Lodge, J. M., de Barba, P., & Broadbent, J. (2023). Learning with generative artificial intelligence within a network of co-regulation. *Journal of University Teaching and Learning Practice*, *20*(7), 1–10. https://doi.org/10.53761/1.20.7.02

Loh, X. M., Lee, V. H., Tan, G. W. H., Ooi, K. B., & Dwivedi, Y. K. (2021). Switching from cash to mobile payment: what's the hold-up? *Internet Research*, *31*(1), 376–399. https://doi.org/10.1108/INTR-04-2020-0175/FULL/XML

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact academia and libraries? *Library Hi Tech News*, *40*(3), 26–29. https://doi.org/10.1108/LHTN-01-2023-0009/FULL/XML

Ly, B., & Ly, R. (2022). Internet banking adoption under Technology Acceptance Model—

Evidence from Cambodian users. *Computers in Human Behavior Reports*, *7*, 100224. https://doi.org/10.1016/J.CHBR.2022.100224

Mailizar, M., Burg, D., & Maulina, S. (2021). Examining university students' behavioural intention to use e-learning during the COVID-19 pandemic: An extended TAM model. *Education and Information Technologies*, *26*(6), 7057–7077. https://doi.org/10.1007/S10639-021-10557-5/TABLES/8

Meet, R. K., Kala, D., & Al-Adwan, A. S. (2022). Exploring factors affecting the adoption of MOOC in Generation Z using extended UTAUT2 model. *Education and Information Technologies*, *27*(7), 10261–10283. https://doi.org/10.1007/S10639-022-11052-1/TABLES/7

Menon, D., & Shilpa, K. (2023). "Chatting with ChatGPT": Analyzing the factors influencing users' intention to Use the Open AI's ChatGPT using the UTAUT model. *Heliyon*, *9*(11). https://doi.org/10.1016/J.HELIYON.2023.E20962

Mohamed A. Ragheb, Passent Tantawi, Nevien Farouk, & Ahmed Hatata. (2022). Investigating the acceptance of applying chat-bot (Artificial intelligence) technology among higher education students in Egypt . *International Journal of Higher Education Management (IJHEM)*, *8*(2).

Molenaar, I. (2022). The concept of hybrid human-AI regulation: Exemplifying how to support young learners' self-regulated learning. *Computers and Education: Artificial Intelligence*, *3*, 100070. https://doi.org/10.1016/J.CAEAI.2022.100070

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, *58*(3), 20–38. https://doi.org/10.1177/002224299405800302

Mostafa, R. B., & Kasamani, T. (2022). Antecedents and consequences of chatbot initial trust. *European Journal of Marketing*, *56*(6), 1748–1771. https://doi.org/10.1108/EJM-02-2020-0084/FULL/XML

Park, S., O'Brien, M. A., Caine, K. E., Rogers, W. A., Fisk, A. D., Van Ittersum, K., Capar, M., & Parsons, L. J. (2006). Acceptance of Computer Technology: Understanding the User and the Organizational Characteristics. *Http://Dx.Doi.Org/10.1177/154193120605001504*, 1478–1482. https://doi.org/10.1177/154193120605001504

Pitardi, V., & Marriott, H. R. (2021). Alexa, *she's* not human but… Unveiling the drivers of consumers' trust in voice-based artificial intelligence. *Psychology & Marketing*, *38*(4), 626–642. https://doi.org/10.1002/mar.21457

Raffaghelli, J. E., Rodríguez, M. E., Guerrero-Roldán, A.-E., & Bañeres, D. (2022). Applying the UTAUT model to explain the students' acceptance of an early warning system in Higher Education. *Computers & Education*, *182*, 104468. https://doi.org/10.1016/j.compedu.2022.104468

Rafique, H., Almagrabi, A. O., Shamim, A., Anwar, F., & Bashir, A. K. (2020). Investigating the Acceptance of Mobile Library Applications with an Extended Technology Acceptance Model (TAM). *Computers & Education*, *145*, 103732. https://doi.org/10.1016/J.COMPEDU.2019.103732

Raza, S. A., Qazi, Z., Qazi, W., & Ahmed, M. (2022). E-learning in higher education during COVID-19: evidence from blackboard learning system. *Journal of Applied Research in Higher Education*, *14*(4), 1603–1622. https://doi.org/10.1108/JARHE-02-2021-0054

Saari, U. A., Tossavainen, A., Kaipainen, K., & Mäkinen, S. J. (2022). Exploring factors

influencing the acceptance of social robots among early adopters and mass market representatives. *Robotics and Autonomous Systems*, *151*, 104033. https://doi.org/10.1016/j.robot.2022.104033

Shin, D. (2021). The effects of explainability and causability on perception, trust, and acceptance: Implications for explainable AI. *International Journal of Human-Computer Studies*, *146*, 102551. https://doi.org/10.1016/J.IJHCS.2020.102551

Silva, S. C., De Cicco, R., Vlačić, B., & Elmashhara, M. G. (2023). Using chatbots in e-retailing – how to mitigate perceived risk and enhance the flow experience. *International Journal of Retail & Distribution Management*, *51*(3), 285–305. https://doi.org/10.1108/IJRDM-05-2022-0163

Strzelecki, A. (2024a). Students' Acceptance of ChatGPT in Higher Education: An Extended Unified Theory of Acceptance and Use of Technology. *Innovative Higher Education*, *49*(2), 223–245. https://doi.org/10.1007/s10755-023-09686-1

Strzelecki, A. (2024b). 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

Taiwo, A. A. , & Downe, A. G. (2013). The theory of user acceptance and use of technology (UTAUT): A meta-analytic review of empirical findings. *Journal of Theoretical & Applied Information Technology*, *49*(1).

Tian, Y., & Wang, X. (2022). A study on psychological determinants of users' autonomous vehicles adoption from anthropomorphism and UTAUT perspectives. *Frontiers in Psychology*, *13*, 986800. https://doi.org/10.3389/FPSYG.2022.986800/BIBTEX

Tzafilkou, K., Perifanou, M., & Economides, A. A. (2021). Negative emotions, cognitive load, acceptance, and self-perceived learning outcome in emergency remote education during COVID-19. *Education and Information Technologies*, *26*(6), 7497–7521. https://doi.org/10.1007/S10639-021-10604-1/TABLES/3

Valtolina, S., Matamoros, R. A., Musiu, E., Epifania, F., & Villa, M. (2022). Extended UTAUT model to analyze the acceptance of virtual assistant's recommendations using interactive visualisations. *Proceedings of the 2022 International Conference on Advanced Visual Interfaces*, 1–5. https://doi.org/10.1145/3531073.3531129

Venkatesh, V. (2022a). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research*, *308*(1–2), 641–652. https://doi.org/10.1007/S10479-020-03918-9/METRICS

Venkatesh, V. (2022b). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research*, *308*(1–2), 641–652. https://doi.org/10.1007/s10479-020-03918-9

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, *46*(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly: Management Information Systems*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information

technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*, *36*(1), 157–178. https://doi.org/10.2307/41410412

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). *Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead*. https://papers.ssrn.com/abstract=2800121

Verdegem, P., & De Marez, L. (2011). Rethinking determinants of ICT acceptance: Towards an integrated and comprehensive overview. *Technovation*, *31*(8), 411–423. https://doi.org/10.1016/j.technovation.2011.02.004

Wang, C., Ahmad, S. F., Bani Ahmad Ayassrah, A. Y. A., Awwad, E. M., Irshad, M., Ali, Y. A., Al-Razgan, M., Khan, Y., & Han, H. (2023). An empirical evaluation of technology acceptance model for Artificial Intelligence in E-commerce. *Heliyon*, *9*(8), e18349. https://doi.org/10.1016/j.heliyon.2023.e18349

Wang, J., Molina, M. D., & Sundar, S. S. (2020). When expert recommendation contradicts peer opinion: Relative social influence of valence, group identity and artificial intelligence. *Computers in Human Behavior*, *107*, 106278. https://doi.org/10.1016/j.chb.2020.106278

Wang, Y.-Y., Luse, A., Townsend, A. M., & Mennecke, B. E. (2015). Understanding the moderating roles of types of recommender systems and products on customer behavioral intention to use recommender systems. *Information Systems and E-Business Management*, *13*(4), 769–799. https://doi.org/10.1007/s10257-014-0269-9

Xue, L., Rashid, A. M., & Ouyang, S. (2024). The Unified Theory of Acceptance and Use of Technology (UTAUT) in Higher Education: A Systematic Review. *SAGE Open*, *14*(1). https://doi.org/10.1177/21582440241229570/ASSET/IMAGES/LARGE/10.1177_21582440241229570-FIG10.JPEG

Yen, C., & Chiang, M. C. (2021). Trust me, if you can: a study on the factors that influence consumers' purchase intention triggered by chatbots based on brain image evidence and self-reported assessments. *Behaviour & Information Technology*, *40*(11), 1177–1194. https://doi.org/10.1080/0144929X.2020.1743362

Yoon, H. Y. (2016). User Acceptance of Mobile Library Applications in Academic Libraries: An Application of the Technology Acceptance Model. *The Journal of Academic Librarianship*, *42*(6), 687–693. https://doi.org/10.1016/J.ACALIB.2016.08.003