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Research Article

Adoption and use of ChatGPT among university IT students: An exploratory study

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ABSTRACT

Technological advancements, particularly those associated with artificial intelligence (AI), have significantly transformed the educational landscape. The ChatGPT tool, developed by OpenAI and launched in 2022, has garnered considerable interest from users globally. This study aims to characterize the perceptions of IT students regarding ChatGPT, exploring variations based on gender and employment status, while also examining the relationships between these perceptions, age, completed semesters, and usage intensity. A comprehensive literature review on AI, with a focus on the ChatGPT tool, was conducted. A questionnaire was distributed to 72 undergraduate IT students to assess their perceptions of ChatGPT usage. The questionnaire encompasses three key areas: confidence, intention to use, and current utilization of the tool. Findings indicate a weak to moderate correlation between the intensity of ChatGPT usage and the statement, "I am willing to make decisions based on ChatGPT recommendations." Additionally, a weak relationship was observed between usage intensity and the perception that "ChatGPT is trustworthy in terms of reliability and credibility," as well as between usage intensity and the willingness to use ChatGPT in the future.

Keywords: chatbot, artificial intelligence, educators, university students

INTRODUCTION

The origins of artificial intelligence (AI) can be traced back to the 1950s, signifying the commencement of an extensive journey that ultimately resulted in the creation of sophisticated machines that exhibit human-like capabilities in independent thought, learning, and reasoning (Choudhury & Shamszare, 2023; Tlili et al., 2023).

Numerous studies indicate that AI has the potential to enhance higher education by facilitating informed decision-making, optimizing educational strategies, and providing support for students with special needs. However, it is crucial to recognize that without appropriate oversight, AI can also lead to negative consequences (Cukurova et al., 2019; Popkhadze, 2021). AI refers to the capability of machines or computational systems to replicate human intelligence through simulation (Zhu et al., 2023).

The leading AI company currently is OpenAI, established in 2015. In June 2020, it launched the initial version of the ChatGPT platform, which facilitates real-time interactions and conversations with users using natural language. The acronym GPT stands for generative pre-trained transformer (OpenAI, 2024b). According to Farrokhnia et al. (2023), the platform was officially released on November 30, 2022, and experienced

significant demand, surpassing one million users within just one week of its launch (Sok & Heng, 2024). Halaweh (2023) notes that OpenAI has introduced a subscription model priced at $20 per month, granting users full access to the platform, especially during peak usage times, along with expedited response times. As of October 2024, the latest version of the platform is GPT-4 (OpenAI, 2024a).

According to Rudolph et al. (2023), ChatGPT is recognized as the most advanced chatbot currently available. Aljanabi (2023) describes ChatGPT as a state-of-the-art linguistic model, representing one of the most significant advancements in AI. Its capability to generate human-like text and address complex inquiries has already made a considerable impact, and it is expected to experience continued rapid growth in the forthcoming years. As we look to the future of ChatGPT and large linguistic models, numerous possibilities and opportunities arise for this technology to enhance our lives and transform our interactions with technology, particularly in the realms of learning, teaching, and research (Jyothy et al., 2024; Stahl & Eke, 2024).

The present study aims to explore the perceptions of undergraduate information technology (IT) students regarding the use, adoption, and functionality of ChatGPT, while also examining variations in perceptions based on gender and employment status. Additionally, the study seeks to correlate perceptions with age, semester of enrollment, and frequency of ChatGPT usage.

The subsequent section will provide a comprehensive literature review, followed by a detailed methodology, presentation of results, discussion, and concluding remarks along with the references utilized.

How Does ChatGPT Work?

According to Pavlik (2023) and Strzelecki (2023), the platform has been developed utilizing AI and an information-generating model. This model is characterized by its ability to produce new information based on initial data, leveraging extensive datasets, social media interactions, and insights from experts across various fields (Choudhury & Shamszare, 2023; Qadir, 2022; Shen et al., 2023). Referred to as a Chatbot, this computer application possesses the capability to engage in dialogue with users, particularly via the internet (King, 2023). Its sophistication allows for conversations on a wide array of topics, and it is proficient in multiple languages, including the ability to translate texts. Additionally, the chatbot operates through natural language processing (NLP), enabling it to respond to inquiries in a manner akin to human written communication.

ChatGPT in Higher Education

According to Aithal and Aithal (2023), technology has significantly transformed and enhanced various facets of society. In the realm of education, it is being leveraged to innovate learning and teaching methodologies, thereby increasing accessibility for individuals across diverse age groups and backgrounds. Rudolph et al. (2023) assert that they were pioneers in publishing a literature review on ChatGPT within a peer-reviewed academic journal, focusing on its implications for assessment, learning, and teaching in higher education.

The integration of AI tools in this sector is anticipated to bring about substantial changes to traditional assessment and instructional practices, including essays, online presentations, and examinations, as increasingly sophisticated AI technologies, such as ChatGPT, continue to develop. Given that this is a nascent field, it remains an area of active investigation among university students, faculty, and researchers.

University Students and ChatGPT

Most university students, along with those from other educational levels such as middle and high school, utilize electronic devices, particularly smartphones, for communication and maintaining connections with family and friends. These devices are also employed for academic, leisure, and, in some instances, professional purposes (López-Mendoza et al., 2023). According to Mhlanga (2023), some students express concerns regarding the ethical implications of employing AI in their academic endeavors. Qadir (2022) highlights a significant drawback of utilizing such tools: the potential for plagiarism, as students may rely on ChatGPT or similar AI applications to generate text or ideas that they subsequently present as their own, thereby committing acts of plagiarism. It is crucial for students to recognize the importance of proper source citation and to engage with these tools in a responsible manner. Furthermore, there are additional disadvantages associated with the misuse of these tools, including excessive dependence, as many academic activities are increasingly conducted through these platforms. Another potential drawback is the risk of

misinformation, as the information generated may not always be entirely reliable, necessitating a critical evaluation against high-quality sources (Cotton et al., 2024; Farrokhnia et al., 2023; Lo, 2023).

Not all students utilize the available tools effectively. In certain instances, the underutilization of these resources may stem from a lack of knowledge or a disinterest among some students in leveraging the tool's full potential. According to Lund and Wang (2023), the platform can generate comprehensive academic essays by segmenting a primary topic into subtopics, allowing ChatGPT to compose each section. This functionality enables the creation of an entire article with remarkable efficiency, as a full version can produce extensive responses, potentially crafting a complete article within seconds with minimal input from the researcher. Furthermore, ChatGPT's capacity to assess the quality of written work can serve as an asset in educational settings, facilitating the evaluation of student submissions and offering constructive feedback. AI language models like ChatGPT hold significant promise as effective and convenient teaching aids for both educators and learners (Qadir, 2022).

University Professors and ChatGPT

At the university affiliated with the authors, discussions have arisen on multiple occasions, particularly during faculty meetings involving directors and administrative personnel–regarding the institution's stance on the utilization of AI tools by students. A pertinent issue raised was the appropriate response if a teacher were to receive an essay generated by ChatGPT. During these discussions, no consensus was achieved, and it appears unlikely that one will be reached. Some educators advocate for the prohibition of such tools, with some even suggesting that their use could undermine the integrity of university writing (Črček & Patekar, 2023). Conversely, there are proponents of these technologies who argue for their integration, emphasizing the necessity of guidance and awareness to ensure ethical usage. When assessing students, the application of AI tools can be beneficial; however, it is imperative to consider ethical implications and adhere to the institution's codes of conduct (Rudolph et al., 2023). Such scientific debates are prevalent when emerging technologies are introduced into educational settings, as they often disrupt traditional methodologies and necessitate that educators adapt to both the advantages and challenges presented (Qadir, 2022).

Advantages and Disadvantages of Their Use

In the comprehensive study conducted by Farrokhnia et al. (2023), a detailed SWOT analysis of ChatGPT is presented. The authors highlight several key strengths, including its advanced linguistic capabilities, which are underpinned by a transformer architecture that facilitates a diverse array of NLP tasks, encompassing both language generation and comprehension. Additionally, ChatGPT's self-improving and self-learning features are noted as significant advantages. It employs a sophisticated language processing model known as generative pre-training (GPT), which leverages reinforcement learning from human feedback to enhance its language model (Mann, 2023). The exceptional performance of ChatGPT is primarily attributed to the extensive volume of training data utilized (Kasneci et al., 2023). Conversely, Farrokhnia et al. (2023) identify several limitations associated with the tool, including a lack of deep understanding, challenges in evaluating response quality, potential biases and discrimination, insufficient higher-order thinking skills, threats to academic integrity, the facilitation of plagiarism in educational and research contexts, and a decline in higher-order cognitive abilities (Nikolopoulou, 2025).

METHOD

Participants

The research was conducted with undergraduate students at a university in northern Mexico that offers a degree in IT, along with four other programs. The primary focus of this study is the utilization of the tool by students enrolled in this specific program. The program has an enrollment of 201 students during the data collection period in November 2023. The sample consisted of 72 students, selected through a non-probabilistic convenience sampling method. Their mean age was 21.5 years (standard deviation [SD] = 3.90). With respect to gender, 49 are male, representing 68%, while 23 are female, constituting 32%. At the time of data collection, the participants were primarily in their first, third, seventh, and eighth semester of study. Less than half of the respondents, specifically 42%, were employed while pursuing their studies, whereas 58% reported that they were not engaged in any work.

Table 1. Instrument used for data collection (adapted from Choudhury & Shamszare, 2023)

		Strongly disagree	Disagree	Agree	Strongly agree
Trust					
Q1	ChatGPT is competent in providing the information and guidance I need				
Q2	ChatGPT provides reliable and consistent information				
Q3	ChatGPT is transparent				
Q4	ChatGPT is trustworthy in the sense that it is reliable and credible				
Q5	ChatGPT will not cause harm, will not manipulate your answers, will not create negative consequences for me				
Q6	ChatGPT will act with integrity and be honest with me				
Q7	ChatGPT is secure and protects my privacy and confidential information				
Intent to use					
Q8	I am willing to use ChatGPT for academic purposes				
Q9	I am willing to make decisions based on recommendations from ChatGPT				
Q10	I am willing to use ChatGPT in the future				
Current use		Once a month	Once every 15 days	Once a week	Every day
Q11	How often do you use ChatGPT?				

Table 2. Characterization of student perceptions gathered in this study

	N	Missing values	Mean	Median	Standard deviation	Inter-quartile range
Q1	66	6	3.24	3.00	0.86	1.00
Q2	66	6	3.14	3.00	0.74	1.00
Q3	59	13	3.02	3.00	0.78	0.50
Q4	68	4	3.03	3.00	0.71	0.25
Q5	64	8	3.13	3.00	0.81	1.00
Q6	63	9	3.14	3.00	0.72	1.00
Q7	59	13	2.98	3.00	0.96	1.50
Q8	67	5	3.15	3.00	0.91	1.00
Q9	64	8	2.70	3.00	0.95	1.00
Q10	67	5	3.15	3.00	0.74	1.00
Q11	72	0	2.17	3.00	1.46	2.00

Instrument

The instrument utilized was adapted from the framework proposed by Choudhury and Shamszare (2023). It underwent a thorough review by two experts in the fields of education and technology. This instrument was designed to assess confidence in ChatGPT, intention to use, and current usage. A detailed presentation of the instrument is available in **Table 1**.

Data Analysis

IBM's statistical package for social sciences version 24 and Jamovi version 2.3.2 were employed for data analysis. A comprehensive descriptive statistical analysis was conducted, including calculations of the mean, SD, median, and interquartile range. Normality was assessed using the Shapiro-Wilk test, while the homogeneity of variances was evaluated through Levene's test. Given the absence of evidence supporting a normal distribution, nonparametric statistics were utilized for both difference and correlation analyses, despite the confirmation of homogeneity of variances. Welch's t-test was applied for group comparisons, and the effect size was determined using Cohen's d. For correlation analysis, Spearman's correlation coefficient was employed. All analyses were conducted with a 95% confidence interval (CI).

RESULTS

Students' Perspectives on Utilization, Acceptance, and Operational Dynamics of ChatGPT

Table 2 presents a comprehensive analysis of the descriptive statistics regarding undergraduate IT students' perceptions concerning the utilization, adoption, and operational effectiveness of ChatGPT.

Table 3. Comparative analysis of perceptions by gender utilizing Welch's t-test

	Welch's test value	Degrees of freedom (df)	p	Effect size (Cohen's d)
Q1	0.93	37.51	0.357	0.25
Q2	0.00	45.05	1.000	0.00
Q3	0.09	23.07	0.927	0.03
Q4	-0.13	46.82	0.894	-0.03
Q5	1.11	31.72	0.274	0.31
Q6	0.29	38.53	0.776	0.08
Q7	0.78	31.41	0.440	0.22
Q8	-1.05	42.35	0.299	-0.27
Q9	-1.14	39.00	0.261	-0.30
Q10	-1.47	56.70	0.147	-0.36
Q11	0.71	51.50	0.483	0.17

Note. H_a: $\mu_{male} \neq \mu_{female}$

Table 4. Comparative analysis of perceptions by work situation utilizing Welch's t-test

	Degrees of freedom (df)	gl	p	Effect size (Cohen's d)
Q1	-1.04	56.96	0.304	-0.26
Q2	-0.24	62.84	0.812	-0.06
Q3	-0.14	53.46	0.888	-0.04
Q4	0.06	63.99	0.950	0.02
Q5	-1.75	60.38	0.085	-0.44
Q6	-2.78	45.17	0.008	-0.73
Q7	-1.58	54.87	0.119	-0.41
Q8	-0.32	55.50	0.754	-0.08
Q9	-0.18	57.01	0.858	-0.05
Q10	-0.33	51.41	0.739	-0.08
Q11	0.16	61.66	0.872	0.04

Note. H_a: $\mu_{Yes} \neq \mu_{No}$

Table 5. Integrity and honesty

Question	Employed	N	Missing	Minimum	Maximum	Mean	Standard deviation	Median	Inter-quartile range
Q6	Yes	25	5	1	4	2.84	0.75	3.00	1.00
	No	38	4	2	4	3.34	0.63	3.00	1.00

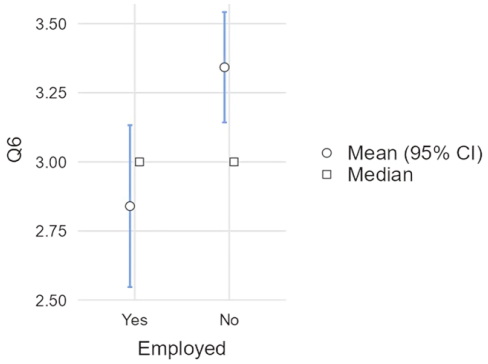

Figure 1. Analysis of Q6 based on participants' employment status (the authors' own elaboration)

Differences in Perceptions by Gender and Employment Status

Table 3 indicates that there were no significant differences related to gender in the responses provided by university students across the various questions.

Table 4 illustrates the differentiation based on employment status. Notably, statistically significant differences were identified exclusively in question 6 (Q6).

Students who are not concurrently employed while pursuing their studies tend to achieve higher scores regarding the variable of integrity and honesty demonstrated by ChatGPT (refer to **Table 5**).

Figure 1 illustrates the mean, median, and 95% CI of students' perceptions concerning question 6, which assesses the belief that ChatGPT will act with integrity and honesty.

Table 6. Spearman correlation between perceptions and participants' age

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Age	Sperman's rho	0.22	0.14	0.05	0.13	0.03	-0.01	-0.03	0.06	0.04	0.02	0.20
	Degrees of freedom (df)	64	64	57	66	62	61	57	64	61	65	69
	p	0.071	0.272	0.690	0.284	0.810	0.952	0.801	0.640	0.778	0.871	0.090

Table 7. Spearman correlation between academic semesters and students' perceptions

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Semester	Sperman's rho	0.16	0.09	0.06	0.17	0.10	0.11	0.04	-0.10	0.04	0.03	-0.063
	Degrees of freedom (df)	64	64	57	66	62	61	57	65	62	65	70
	p	0.212	0.489	0.673	0.178	0.428	0.391	0.779	0.424	0.767	0.823	0.602

Table 8. Spearman correlation analysis examining the relationship between the intensity of ChatGPT usage and students' perceptions

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Q11	Sperman's rho	0.15	0.03	0.25	0.27*	0.06	0.24	0.18	0.15	0.43***	0.25*
	gl	64	64	57	66	62	61	57	65	62	65
	p	0.238	0.790	0.057	0.027	0.656	0.063	0.168	0.212	< .001	0.041

Relationship of Perceptions With Age, Semester Attended, and Intensity of ChatGPT Use

The correlation between perceptions and variables such as age, semester of attendance, and the frequency of ChatGPT utilization.

Table 6 indicates that there is no significant correlation between participants' perceptions and their age.

Table 7 indicates an absence of correlation between the semester attended by students and their perceptions.

The analysis presented in **Table 8** reveals a positive correlation, described as weak to moderate, between the frequency of ChatGPT usage (Q11) and the responses to question 9, which assesses the willingness to make decisions based on recommendations provided by ChatGPT.

A positive yet weak correlation was identified between the frequency of ChatGPT usage and the responses to question 4, which assesses the perceived trustworthiness, reliability, and credibility of ChatGPT. Additionally, a similar weak positive correlation was observed between the intensity of ChatGPT usage and question 10, which evaluates the willingness to utilize ChatGPT in the future.

DISCUSSION

Approximately 25% of respondents indicated that they do not utilize ChatGPT. Among those who do, the majority expressed confidence in the tool's ability to deliver reliable and consistent information. They characterized ChatGPT as trustworthy, asserting that it does not pose risks of harm or manipulate responses. Notably, around 75% of participants agreed with these positive assessments regarding their trust in the tool.

The average scores for each question are approximately 3 on a scale of 1 to 4. There is no evidence to suggest that perceptions regarding the use of ChatGPT differ between men and women in any context.

Individuals who are not engaged in work often believe that ChatGPT exhibits greater integrity and honesty compared to those who are employed. This perception may stem from the heightened knowledge and expectations of working individuals, which are shaped by their professional experiences. Nevertheless, further research is required to validate this hypothesis.

The analysis indicates an absence of correlation between age and perceptions regarding the use of ChatGPT. Additionally, there is no evidence to suggest a relationship between the semester in which students are enrolled and their perceptions of ChatGPT usage.

A positive correlation was identified between the frequency of ChatGPT usage and the perception of its trustworthiness (p4), as well as the willingness to utilize ChatGPT in the future (p10). Specifically, increased usage correlates with heightened trust and a greater inclination to continue using the platform moving forward.

A positive and moderate correlation was identified between the frequency of ChatGPT usage and the willingness to make decisions based on its recommendations. However, perceptions regarding the security of ChatGPT and its ability to safeguard privacy and confidential information received lower ratings, with fewer than two-thirds of respondents expressing agreement or strong agreement.

In relation to the intended use of ChatGPT, a significant majority of students expressed their agreement with utilizing the tool for academic purposes, with 80% indicating their support. However, there was a notable decline in the willingness to make decisions based on the recommendations provided by the tool, with only about 50% of respondents affirming their agreement compared to those who disagreed.

The ChatGPT tool presents significant potential for advancement, particularly when integrated with robotics and systems equipped with vision and tactile capabilities. This integration could result in a transformative development by incorporating language, thereby enhancing our interaction with technology. We concur with Cotton et al. (2024) regarding the substantial benefits the platform offers to students in higher education. Additionally, we align with Halaweh (2023) in emphasizing the necessity of implementing strategic frameworks and institutional policies to ensure the ethical utilization of ChatGPT, thereby mitigating potential ethical concerns.

The study presents several limitations, primarily related to the sample characteristics. The sample size is limited due to the low enrollment of students in the analyzed program within the institution.

CONCLUSION

The study examined the utilization of the ChatGPT tool among university students. The findings indicate that most of the students report using the tool, while those who have not yet adopted it express intentions to do so in the future. Nevertheless, when questioned about their willingness to base decisions on the tool's outputs, a considerable number of respondents indicated disagreement.

The study's findings provide valuable insights into the perceptions and utilization of ChatGPT among undergraduate IT students. The results highlight several noteworthy observations.

The uniformity in perceptions between genders indicates that ChatGPT is regarded similarly by both males and females, reflecting an equitable adoption of this technology within the realm of IT academia.

The disparity in the perceived integrity and honesty of ChatGPT among working versus non-working students presents intriguing inquiries regarding the impact of work experience on expectations and trust in AI technologies. This observation necessitates further exploration to gain a deeper understanding of the fundamental factors involved.

The absence of a correlation between age or completed semester and perceptions of ChatGPT indicates that the impact of this technology is likely shaped more by individual characteristics or contextual elements rather than by academic advancement or age.

The observed correlations between the frequency of ChatGPT utilization and factors such as user confidence, future willingness to engage with the tool, and the propensity to base decisions on its recommendations suggest the existence of a positive feedback loop. This implies that firsthand experience with the tool enhances both its adoption, and the trust users place in it.

The nuanced relationship between extensive usage and the propensity to make decisions informed by ChatGPT warrants careful consideration, as it may have profound implications for the education of future IT professionals and their dependence on AI tools.

The results highlight the increasing incorporation of ChatGPT within the IT educational landscape. Nonetheless, they also present significant implications for educators and policymakers in the education sector.

It is essential to establish comprehensive guidelines regarding the ethical and appropriate utilization of ChatGPT within academic settings.

Encouraging critical thinking and thorough evaluation of the information provided by ChatGPT is essential, particularly in light of the increasing dependence on its recommendations.

Conducting longitudinal research is essential for comprehensively understanding the evolution of perceptions and their implications on the professional competencies of IT graduates over time.

The findings indicate a significant level of adoption and a predominantly favorable perception; however, they also highlight the necessity for a balanced strategy that maximizes the advantages of this technology while upholding a critical and ethical perspective in its implementation.

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Ethics declaration: This study was approved by the coordination of the bachelor's degree program in Information Technology at the Nuevo Laredo Faculty of Commerce, Administration, and Social Sciences. All students gave their informed consent before participating in the survey. They could withdraw from the survey at any time and were not encouraged or forced to participate. The data collected is only that which appears in the questionnaire, and no sensitive data was collected from the students. The surveys were anonymous, and the data was treated confidentially.

Declaration of interest: The authors declared no competing interest.

Data availability: Data generated or analyzed during this study are available from the authors on request.

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