Scientific Research Publishing

Open Journal of Business and Management, 2025, 13(4), 2941-2964
https://www.scirp.org/journal/ojbm
ISSN Online: 2329-3292
ISSN Print: 2329-3284

Understanding the Adoption and Use of ChatGPT Technology in Private Jordanian Universities Using the UTAUT Model: From the Students' Perspective

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How to cite this paper: Al-Zabadi, A. M. K., & Jaradat, M.-I. R. (2025). Understanding the Adoption and Use of ChatGPT Technology in Private Jordanian Universities Using the UTAUT Model: From the Students' Perspective. *Open Journal of Business and Management, 13,* 2941-2964.
https://doi.org/10.4236/ojbm.2025.134155

Received: May 10, 2025
Accepted: July 27, 2025
Published: July 30, 2025

Abstract

The study aimed to identify the understanding of the adoption and use of ChatGPT technology in Jordanian private universities using the UTAUT model: From the students' point of view, the study relied on the quantitative (descriptive-analytical) approach to conduct the research, and used the questionnaire as a tool to collect and analyze data in order to answer the study questions and verify its hypotheses. The study sample included (385) students in Jordanian private universities, and they were selected using the stratified random sample method, where the SPSS and AMOS programs were used. The key findings of the study revealed statistically significant positive effects between the UTAUT model components (performance expectancy, effort expectancy, social influence, and facilitating conditions) and behavioral intention and usage behavior towards adopting ChatGPT technology among students in Jordanian universities. These factors explain a significant portion of the variations in behavioral intention and usage behavior, without significant statistical differences based on gender, age, experience, or voluntariness of use. Based on the results, the study recommended the need to clarify the practical and academic benefits of using ChatGPT in education to enhance performance expectancy among students.

Keywords

ChatGPT, Unified Theory of Acceptance and Use of Technology UTAUT, Artificial Intelligence (AI)

1. Introduction

In recent years, we have witnessed significant advancements in technology, par-

ticularly in the impact of artificial intelligence (AI) across various sectors, including education. Today, all sectors strive to adopt smart technologies, with AI emerging as one of the most prominent tools that can be effectively utilized to improve educational processes. In this context, ChatGPT stands out as one of the leading tools in AI, significantly contributing to enhancing the learning experience and developing educational resources in innovative and efficient ways. As Qadir (2022) states that ChatGPT can play a significant role in improving the learning experience through its innovative applications.

In addition, ChatGPT is a natural language processing model introduced in November 2022. The primary goal of this model is to generate linguistically accurate text while maintaining the desired style. Unlike previous models, the system developed by the Open-AI team (OpenAI, 2022) is an AI-driven Chabot that simulates human-like dialogue, even in languages other than its original programming. This type of methodology could help in creating original content through direct interaction with the user. Moreover, the model maintains a conversational style in a consistent way that helps to engage users effectively and realistically.

This model is distinguished from other AI technologies because it has the ability to provide precise answers to any question in a highly unique way. Its applications have demonstrated exceptional performance in various areas such as creating coherent academic content, producing concise articles, facilitating language translation, and answering user questions perfectly. Abu Asr (2023) notes that both students and educators can significantly benefit from using ChatGPT in the field of education. Therefore, the present study leverages ChatGPT technology to assess the willingness of students in private Jordanian universities to adopt it. The study implements the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. The study attempts to explore the relationship between its dimensions: performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention, and actual use behavior.

This study aims to address two key research questions: "What is the level of acceptance to Adopt/Use ChatGPT technology amongst students at private Jordanian universities according to the UTAUT?" The second research question is, "Is there any statistical difference in students' willingness to adopt/use ChatGPT technology based on demographic factors (Gender, Age, Experience, Voluntariness)?" In relation to these questions, the study aims are: to investigate factors that affect students' acceptance of ChatGPT technology in private Jordanian universities; to determine the extent of their willingness to adopt and use this technology based on the UTAUT model; and to determine the relationship between demographic factors and their adoption and use of the technology.

2. Statement of the Problem

Universities as institutions of higher learning and the University as a business institution provide expertise along with being important information and innovative and enterprising reference points within society. The strength is usually real-

ized from the capabilities of the academic/administrative leadership in those universities. Therefore, the purpose of the present work is to reveal the further potential of AI tools, including ChatGPT, for enhancing educational processes. It is for this reason that acceptance by users of such tools in this case students is essential when it comes to the use of the tools in academic environment. These study ideas were formulated by the researchers in their administrative activities which task them to engage with faculty members and students in universities. In the framework of the increasing tendency all over the world to apply technology in different spheres of life, many present approaches to education contain components of distance learning and electronic means for controlling the educational process. However, some students are not familiar enough with the AI-related tools like ChatGPT, and due to the traditional approaches to teaching and learning, and shifting in one step and adopting new technologies, they hamper use of these tools. Furthermore, issues like lack of infrastructure for AI program implementation in universities also make it impossible to implement an effective AI integration process. For these reasons, it is hard to attain the maximum and intersectional use of AI in education (Al-Furani & Al-Hujaili, 2020). Based on the above challenges, the study seeks to address the following primary research question: To what extent the students accept the establishment of ChatGPT technology in private Jordanian universities according to the UTAUT model?

3. Significance of the Study

Therefore, the goal of the present research is to highlight the theoretical implications of discussing ChatGPT technology that is still rather novel. This scholarly paper reviewed earlier research and finding and notice the lack of research on this specific topic especially in the Arab countries. Known to the researchers, this elaboration is among the few investigations in the region diversifying intellectual and theoretical knowledge linked to the study variables and posing emphasis on the novel proffer and applicatory milieu. It explores students' acceptance of the ChatGPT technology in private Jordanian universities using the UTAUT model. The present work can be useful for scholars who would like to analyze ChatGPT technology by presenting further scientific studies on the topic. Therefore, in this context, we present the following academic values of this work: Its findings may prove useful to decision-makers in higher education in the Hashemite Kingdom of Jordan to prevent worst-practice use of the technology and to promote best practice. Furthermore, the study can help policymakers have a better scientific groundwork for the formulation of plans to adopt the technology in higher institutions and decision making while addressing factors that might affect the students' acceptance of such technologies.

Furthermore, this study fills the research gaps within the local context more specifically, this research examines the factors influencing the students' acceptance of ChatGPT technology using the UTAUT model. Last but not least, the study's conclusion will motivate other researchers in the subject to hunt for other avenues

that can be investigated to increase the understanding of this developing stream.

4. Research Hypotheses

Hypothesis 1: There is no statistically significant effect at the significance level ($\alpha \leq 0.05$) of performance expectancy (PE) on behavioral intention (BI) to adopt and use of ChatGPT technology among students in private Jordanian universities.

Hypothesis 2: There is no statistically significant effect at the significance level ($\alpha \leq 0.05$) of effort expectancy (EE) on behavioral intention (BI) to adopt and use of ChatGPT technology among students in private Jordanian universities.

Hypothesis 3: There is no statistically significant effect at the significance level ($\alpha \leq 0.05$) of social influence (SI) on behavioral intention (BI) to adopt and use ChatGPT technology among students in private Jordanian universities.

Hypothesis 4: There is no statistically significant effect at the significance level ($\alpha \leq 0.05$) of facilitating conditions (FC) on usage behavior (UB) to adopt and use of ChatGPT technology among students in private Jordanian universities.

Hypothesis 5: There is no statistically significant effect at the significance level ($\alpha \leq 0.05$) of behavioral intention (BI) on usage behavior (UB) to adopt and use of ChatGPT technology among students in private Jordanian universities.

5. Study Model

To achieve the purpose of this study and meet its objectives in determining the effect of the independent variables on the dependent variables, a study model was developed based on the global UTAUT framework.

6. Conceptual and Operational Definitions

6.1. Chat Generative Pre-Trained Transformers (ChatGPT)

- Conceptual Definition: ChatGPT is a chatbot developed by OpenAI, designed to produce human-like text. Introduced in 2021, it gained significant recognition in the industry. GPT, standing for Generative Pre-Trained Transformer, is a language model widely used for various natural language processing (NLP) tasks, including translation, summarization, question answering, and text generation, with minimal specialized training. It is considered one of the most advanced language models available today (Willems, 2023; Abu Bakr, 2023).
- Operational Definition: ChatGPT is defined as an AI tool that has high capability to meet diverse teaching and research needs at the university level. Also, it provides linguistic and analytical processing in an effective and innovative manner. It is a program designed to write, edit, and perform various aspects of scientific research across all sectors, particularly in the education sector in private Jordanian universities. A specific questionnaire is used to assess the utility of ChatGPT.

6.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

- Conceptual Definition: Venkatesh & Morris (2000) state that the Unified The-

ory of Acceptance and Use of Technology (UTAUT) can be defined as a framework for studying individuals' intentions and behaviors when adopting modern technologies. The theory incorporates four factors: "performance expectancy, effort expectancy, social influence, and facilitating conditions" (Al-Furani & Al-Hujaili, 2020: p. 6).

- Operational Definition: UTAUT refers to the framework used to measure students' acceptance of ChatGPT in education. These factors will be evaluated through specific dimensions.

6.3. Performance Expectancy (PE)

- Conceptual Definition: Al-Furani & Al-Hujaili (2020) state that: "The degree to which an individual believes that using a particular system will enhance their job performance and achieve benefits." (p. 7)
- Operational Definition: The level of intellectual agreement and proposed by students the belief that ChatGPT use in education will help them achieve planned educational outcomes or serve their professional or personal needs. This will be accomplished using closed specific questions on questionnaires to be administered among the target respondent group.

6.4. Effort Expectancy (EE)

- Conceptual Definition: Al-Furani & Al-Hujaili (2020) write that: "The degree to which an individual perceives a particular system as easy to use" (p. 7).
- Operational Definition: Regarding the EASE perspective, the degree to which students perceived using ChatGPT in education as easy and effortless. This will be evaluated by other related and specific questionnaire items.

6.5. Facilitating Conditions (FC)

- Conceptual Definitions: Regarding the EASE perspective, the degree to which students perceived using ChatGPT in education as easy and effortless. This will be evaluated by other related and specific questionnaire items.
- Operational Definition: The extent to which students perceive that all necessary requirements, such as robust infrastructure, tools, and technical support, are available to facilitate the use of ChatGPT in education. This will be evaluated through specific questionnaire items.

6.6. Behavioral Intention (BI)

- Conceptual Definitions: Al-Furani & Al-Hujaili (2020) state that: "An individual's intention and likelihood to adopt a particular system in the future" (p. 7).
- Operational Definition: The assessment of the extent to which students are willing and prepared to act in certain ways, for example, using ChatGPT in the future. This shall be assessed through the responses of the respondents to certain pictorial and written questions formulated in the questionnaire.

This study scopes four key dimensions:

- **Thematic Scope:**

The investigation is aimed at examining and explaining students' perceptions of using ChatGPT technology in learning environment according to the UTAUT model. They address the antecedents of behavioral intention and usage behavior.

- **Population Scope:**

As the target population, only students from private universities in Jordan are included in the study.

- **Geographical Scope:**

In this respect, the study is limited to private universities within the Hashemite Kingdom of Jordan.

- **Temporal Scope:**

This research is carried out in the year 2023/2024 academic year.

7. Generative AI or ChatGPT Technology

Concept of ChatGPT Technology:

ChatGPT can be regarded as a quantum leap in creation of the means of interaction between man and computer using AI enhanced communication art. This technology is underpinned by an extremely sophisticated deep linguistic model christened as GPT or Generative Pre-trained Transformer. ChatGPT is characterized by understanding as well as generation of text in a natural way, and it can mimic the conversation with the user. The model is trained through tremendous data retrieved from the internet so that it is very potential to understand the human language and capable to answer any kind of questions and topics. Since ChatGPT is a deep linguistic concept, its definitions are relative. Below is an overview of selected definitions (Table 1):

Table 1. The concept of ChatGPT technology.

No.	Researcher	Year	Definition
1	Qanawi	2024	Defined ChatGPT as an innovative technology combining statistics and reinforcement learning, capable of recognizing and analyzing language through an advanced index of words, phrases, and sentences. It enables intelligent and logical generation of articles and information summaries.
2	Willems	2023	Described ChatGPT as a chatbot developed by OpenAI, designed specifically to generate human-like text. Released in 2021, it gained widespread recognition in the industry. GPT, representing a generative pre-trained transformer, is a widely used language model for natural language processing tasks, including translation, summarization, question answering, and text generation with minimal fine-tuning. It is regarded as one of the largest language models in existence.
3	Himmel Man	2023	Defined ChatGPT as a chatbot utilizing GPT-3 technology, developed by OpenAI, a leading AI research company. It interacts in human-like language and is used for tasks such as writing research papers and solving mathematical equations, offering high-quality content generation and comprehensive understanding of inquiries.

Based on the aforementioned definitions, the researchers define generative AI, specifically ChatGPT, as an artificial intelligence tool designed to meet diverse

teaching and research needs within universities. It offers linguistic and analytical processing in an innovative and effective manner, capable of writing, editing, and conducting various dimensions of academic research across all sectors, particularly in the educational domain within Jordanian private universities.

Overview of ChatGPT Technology:

In November 2022, the world witnessed the initial release of ChatGPT, an AI-driven chatbot. This program demonstrates the ability to produce coherent and information-rich responses that emulate human-like qualities, leveraging principles and techniques from natural language processing (NLP). ChatGPT is among the most advanced applications of AI available, designed to enable chatbots to interact naturally and effectively with users.

In the marketplace, ChatGPT offers significant opportunities to enhance corporate communication efficiency, enabling rapid, accurate responses and comprehensive support for users anytime and anywhere. The continuous development of ChatGPT is expected to strengthen its impact on the evolving labor market. ChatGPT's role in improving communication efficiency and enhancing user experiences will likely expand in industries sector.

In recent years, ChatGPT has become an effective tool available for users to communicate with it. By employing NLA as well as AI technologies, ChatGPT offers intelligent answers to the queries posed and one attends to them proactively. It is known in multiple fields of application, providing improvements to operation and creative potential for user satisfaction. Today, ChatGPT and its derivatives are among the scientific foundation of the progress as seen from their constant development and application across data analysis and hypothesis generation. Following this, this research will explore an overview of the impacts of ChatGPT in different domains and its benefit and drawback.

The Benefits of Using ChatGPT Technology in University Education:

ChatGPT or otherwise known as chatbot technology refers to a revolutionized advanced technique in the field of communication and interaction between computers and people. ChatGPT applies artificial intelligence, particularly natural language processing which allows devices and users to communicate independently. Its application revealed a range of benefits that can be obtained across different spheres, which confirmed the efficiency of its application as the effective tool for improving the communication and users' experience. Below are the key benefits of using ChatGPT technology in University Education:

- Enhancing Interactive Learning Experience:

With ChatGPT, not only do students gain knowledge from various topics but also, they get to interact with the model by asking real-time questions and get compact and elaborate answers. Information discussed in the interactions help encourage the students' participation in learning process, and self-directed & guided learning (Suárez et al., 2023).

- Personalized Learning:

ChatGPT using Artificial Intelligence to help modify material to suit each stu-

dent's requirements in education. It presents assignments relevant to learning levels and potential of the students and increases effectiveness of performance, thereby enhancing students' effectiveness (Kim, 2023).

- Supporting Faculty Members:

Some of the ways that ChatGPT can help faculty include developing content, teaching and learning plans, as well as student motorcycle responses. This helps to relieve some of the administrative and academic pressures placed on trainers and academicians and to allow them to attend more directly to instruction and doctoral advisement (Strzelecki, 2023).

- Promoting Innovation in Classroom:

The adoption of ChatGPT in setting promotes creativity in the classroom practices. It makes one feel that they are very active in class as it applies modern technology equipment in teaching (Menon & Shilpa, 2023).

- Enhancing Critical Thinking Skills:

Students can also use ChatGPT for interactions where they able to sharpen their critical thinking abilities. Despite the information posturing significant knowledge of being able to decipher the abilities involving logical thinking abilities and critical assessment in the process of questioning and monitoring a discourse paired with the analysis of the answers given (Suárez et al., 2023).

8. Unified Theory of Acceptance and Use of Technology (UTAUT Model)

Theoretical Basic of the Unified Theory of Acceptance and Use of Technology (UTAUT Model)

The roots of the UTAUT model can be traced back to earlier models and theories in the domain of technology adoption. This model emerged as an attempt to unify these frameworks into a single theoretical structure, clarifying the variables influencing technology use. Efforts began in 2003 when Venkatesh, Morris, Davis, and Davis reviewed prior studies and dominant theories in the field of user acceptance of information and communication technology. This review discussed eight closely related models and theories, including:

Theory of Reasoned Action (TRA):

This theory focuses on understanding the factors that influence an individual's behavior. Attitudes toward behavior indicate the individual's favorability or aversion to the action, while subjective norms reflect the perceived expectations of significant others about whether the behavior should be performed.

Technology Acceptance Model (TAM):

Introduced by Davis in 1989, TAM emphasizes factors influencing the acceptance and use of technology. It suggests that actual use is driven by attitudes toward technology, which in turn are shaped by perceived usefulness and perceived ease of use.

Motivational Model (MM):

According to Deci and Ryan in 1987, the MM explains behavior through intrin-

sic and extrinsic motivations. Intrinsic motivation relates to the inherent satisfaction from engaging in an activity. On the other side, the extrinsic motivation involves external rewards or avoidance of penalties to enhance performance (Khan & Qudrat-Ullah, 2021).

Combined TAM and TPB Model:

This hybrid model merges the Theory of Planned Behavior (TPB) and TAM to provide a comprehensive framework for technology acceptance. It integrates attitudes, subjective norms, perceived behavioral control, and perceived usefulness (Chen & Lin, 2021).

Concept of the Unified Theory of Acceptance and Use of Technology (UTAUT)

The implemented UTAUT framework aims to measure the extent of technology acceptance, and identify influencing factors. **Table 2** provides selected definitions of the model:

Table 2. The concept of the Unified Theory of Acceptance and Use of Technology (UTAUT).

Researcher	Year	Definition
Thabet	2023	Technology acceptance is defined as a clear willingness among users to adopt ICT to complete specific tasks for which it was designed (Thabet, 2023).
Al-Frani & Hajili	2020	The theory examines individuals' intentions and behaviors toward technology, emphasizing four factors: performance expectancy, effort expectancy, social influence, and facilitating conditions (Al-Furani & Al-Hajili, 2020).
Al-Shahrani	2019	Technology acceptance refers to users' readiness to employ technology in carrying out and enhancing specific tasks (Al-Shahrani, 2019).
Al-Huwaiti	2022	UTAUT represents a theoretical framework explaining individuals' intentions and behaviors toward modern technology use, merging elements from eight previous theories (Al-Huwaiti, 2022).

Importance of the UTAUT Model

In today's technological era, technology has evolved into an integral part of individual and institutional life. Understanding user behavior toward technology adoption is crucial for the following reasons (Duaa'k, 2023):

1) Behavioral Insight:

UTAUT provides a robust framework for assessing user behavior toward new technologies, offering theoretical foundations for technology adoption.

2) User Habits and Environment:

The model clarifies how users' habits and environments influence their behaviors toward adopting or rejecting technology, and includes their readiness to transition from traditional methods.

3) Technology Perception and Utility:

Adoption depends on users' perceived benefits, adaptability, and utility of technology, to highlight the interaction between practical experience and cognitive learning.

9. Dimensions and Factors of the UTAUT Model

Performance Expectancy (PE):

This is the key determinant of an individual's use of new technology. Perceived usefulness, external motivation, functional tidal compatibility, relative advantage, and expected result are also components of the theory. The users weigh these aspects in a bid to determine whether or not adopting the technology would help them achieve performance goals (Venkatesh et al., 2003).

Effort Expectancy (EE):

The second of the four core results, effort expectancy, is defined as the degree to which an individual believes that the use of a particular technology tool will be easy. This refers to the design and background skills that are needed for operation of its functional processes. Key highlights of effort expectancy (Mukhtar, 2023):

- Directly influences the intention to use technology and indirectly affects actual usage behavior.
- Depends on variables such as perceived usefulness, external motivators, and task compatibility.
- Affects adoption rates when usability is unclear or overly complex.
- Helps designers create user-friendly systems that encourage adoption.

Social Influence (SI):

The extent to which an individual is influenced by the opinions of important people in their life when deciding to use technology (Venkatesh et al., 2003).

Facilitating Conditions (FC):

The extent to which technical support, infrastructure, and resources are available to help the user successfully adopt and use the technology (Venkatesh et al., 2003).

Effort expectancy is a critical determinant for understanding individual responses to technology and plays a vital role in shaping adoption behaviors and improving technology design.

10. Literature Review

Studies Related the Independent Variable (ChatGPT Technology)

Omar's (2023) research (direction) was specifically concerned with assessing the acceptance of ChatGPT technology among the youthful population in Egypt and its questionnaire was based on the use of the traditional Technology Acceptance Model (TAM) alongside with the Diffusion of Innovation Theory. The study used electronic surveys and focus group discussions, descriptive, and analytical survey approaches. These participants comprised 121 individuals from Greater Cairo with prior exposure to the technology. The research identified that the kind of information that was appreciated was specific but clear, as well as the

fact that the usage of that technology has a positive correlation with users' attitudes towards it. Thus, the type of the smartphone in focus did not show any statistically significant differences. Suggestions on the work are to extend the survey to other populations including senior citizens, students and the teaching fraternity in order to test their level of using ChatGPT technology.

Hussain et al. (2023) focused on understanding how ChatGPT-related content engages consumers on YouTube. By analyzing data from 100 YouTube videos that collectively garnered 65 million views, using three software tools (VidIQ, TubeBuddy, SocialBlade), and comparing this data with 200 videos created by the same producers, the study applied one-way ANOVA, multi-group SEM, and comparative linear graphs. Results indicated that innovative content, such as ChatGPT-related videos, achieved higher engagement than other types of content from the same channels. The study recommended content creators to align their focus with the growth objectives of their channels, emphasizing the importance of high-quality, relevant, and unique content for sustainable, long-term growth.

Suárez et al. (2023) evaluated whether ChatGPT-4 could provide accurate and reliable responses for general dentists in the field of oral surgery, assessing its potential as a virtual intelligent assistant. Thirty oral surgery-related questions were posed to ChatGPT-4, with each question repeated 30 times, generating 900 responses. Two surgeons evaluated these answers according to the Spanish Association of Oral Surgery guidelines. The findings showed a 71.7% accuracy rate with a high level of agreement among experts. The study recommended integrating ChatGPT-4 as a virtual assistant in dentistry, particularly in oral surgery, while emphasizing that it should not replace expert surgeons.

Studies Related to the Dependent Variable (Unified Theory of Acceptance and Use of Technology—UTAUT)

Duaak's (2023) study examined the factors influencing the use of artificial intelligence applications by public school teachers through the lens of UTAUT. The descriptive methodology was employed, with a sample of 350 teachers (155 males and 195 females).

Statistical tests thus used ranged from T-tests, ANOVA, and Scheffé's tests. Non-significant hypotheses include; H3c; performance expectancy, effort expectancy, social influence, facilitating condition were found to have significant relationship with teacher's use of AI applications. Performance expectancy was significantly higher among females and facilitating conditions were significantly lower among female students, compared with their male counterparts. According to the study, the performance expectancy towards the use of AI application can be enhanced through organization of workshops and seminars.

Al-Frani, L. & Al-Hajili, S. (2020) examined further the utilization of the Virtual Classroom technology by teachers based on the actual usage and factors affecting it using UTAUT. This work adopted an expository quantitative research method in which 304 male and 463 female teachers in Jeddah were sampled and asked to complete the questionnaires. Implication of Virtual Classrooms The results more-

over revealed high acceptance rate of virtual classrooms with varying influence of age and facilitating conditions. PI: performance expectancy, EE: effort expectancy, SI: social influence, FC facilitated the adoption of virtual classrooms. Proposed solutions focused on providing training courses for teachers to increase use of technology and modifying facilities to increase proper application of virtual classroom.

Studies Examining Both ChatGPT Technology and UTAUT

Using UTAUT, Menon and Shilpa (2023) examined the determinants influencing users' acceptance of ChatGPT. A qualitative research design was adopted, and both non-probability and convenience sampling methods were used to gather data from thirty-two ChatGPT users in India using semi-structured interviews. The findings provided awareness to the significance of the four factors in UTAUT and privacy concern in acceptance. However, the gender and self-employment had an inverse relation to the factors above in that their negative effects were moderated by age and experience. In more detail, the study suggested that the empirical issue should be expanded to promote using both UTAUT and ChatGPT technologies at the same time.

Strzelecki (2023) proposed a model of the intent to adopt and use ChatGPT among Polish higher education students using UTAUT. Hypotheses of the research were tested by the means of descriptive-analytical approach based on a survey among 534 University students. The data were analyzed with using Partial Least Squares Structural Equation Modeling (PLS-SEM). Findings revealed that habits were the strongest predictors of behavioral intention, followed by personal innovativeness. The study recommended further exploration of AI tools in education and teaching practices.

Kim (2023) examined the intentions of South Korean university students and young office workers to use ChatGPT, applying UTAUT. Using a descriptive-analytical approach, a comprehensive survey was conducted among students and IT professionals. Results indicated that performance expectancy, effort expectancy, and social influence positively influenced behavioral intentions to use ChatGPT, while perceived risks negatively impacted adoption. The study suggested conducting similar research in other communities to generalize findings.

Commentary on Previous Studies

This study distinguishes itself from prior research in several aspects:

1) Variables: While previous studies explored UTAUT or ChatGPT separately, this study uniquely examines the factors influencing students' acceptance of ChatGPT technology within Jordanian private universities, addressing a gap in Arab and Jordanian research in this domain.

2) Scope: Unlike studies conducted in diverse sectors such as government institutions, banks, and international companies, this study focuses exclusively on private universities in Jordan, employing a descriptive-analytical methodology.

3) Context: Conducted in the unique setting of Jordan, this study adds practical value by addressing the challenges and dynamics of ChatGPT technology usage in a university environment, offering insights tailored to the Jordanian

educational context.

11. Methodology and Procedures

Study Methodology

To address the research questions and achieve its objectives, the descriptive-analytical methodology was employed. This approach is particularly suitable for providing a clear and precise understanding of the research problem. It facilitates the comprehension of this study by enriching it with knowledge and facts, specifically those related to the impact of the factors influencing students' acceptance of using ChatGPT technology in private Jordanian universities, as guided by the Unified Theory of Acceptance and Use of Technology (UTAUT).

Study Population and Sample

The study population comprised undergraduate students from private Jordanian universities. According to the statistics from the Ministry of Higher Education and Scientific Research, accessed on January 19, 2024, the total number of students in the academic year 2023/2024 was 78,295. This distribution is detailed in Tables 1-3.

Study Sample

The selection of private universities was based on geographical regions:

- Northern Region: This includes five universities—Irbid National University, Jadara University, Jerash Private University, and Ajloun National University.
- Central Region (Amman): This region comprises 19 universities, including the Jordan Academy of Music, American University of Madaba, Arab Community College for Technology, Al-Isra University, Princess Sumaya University for Technology, Petra University, Al-Zaytoonah University of Jordan, Middle East University, Applied Science University, Al-Ahliyya Amman University, Amman Arab University, Philadelphia University, Al-Khwarizmi College, Educational Sciences and Arts College-UNRWA, Ammon Applied College, Luminus Technical University College, Al-Hussein Technical University, World Islamic Sciences and Education University, and the Arab Open University.
- Southern Region: This region includes one university, Aqaba University of Technology.
- Eastern Region: This region includes Zarqa University.

A proportional stratified random sample representing the study population will be formed. The sample size (N) will be determined using Stephen Thompson's formula (Thompson, 2012), as follows:

Sample Size Formula and Calculation (to be elaborated based on data)\text Sample Size Formula and Calculation (to be elaborated based on data) Sample Size Formula and Calculation (to be elaborated based on data).

This methodology ensures a representative and balanced sample from the diverse private universities across Jordan's regions.

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

where (N) represents the population size, and (z) represents the standard score for the significance level (0.05) and confidence level (0.95), which equals (1.96), and (d) is the margin of error, which equals (0.05), and (P) is the probability value, which equals (0.50). By applying the previous equation to the study population, the total sample size suitable for the study is 385 students. Accordingly, the sample applied is shown in Table 3:

Table 3. Represents the number of the original study population and the sample.

No.	University Name	Number of Students in Study Population	Percentage of Students in Total Population	Sample Size in Total Sample (Approx.)
1	Jordanian Academy of Music	20	0.03%	1
2	American University in Madaba	1376	1.76%	7
3	Arab College of Technology	85	0.11%	1
4	Irbid National University	2519	3.22%	12
5	Al-Isra University	4742	6.06%	23
6	Princess Sumaya University of Technology	3639	4.65%	18
7	Petra University	6200	7.92%	30
8	Zarqa Private University	6221	7.94%	30
9	Jordan Olive University	7787	9.95%	38
10	Middle East University	3819	4.88%	19
11	Aqaba University of Technology	623	0.80%	3
12	Applied Science University	5693	7.27%	28
13	Jadara University	3904	4.99%	19
14	Jerash Private University	3993	5.10%	20
15	Ajloun National University	2046	2.61%	10
16	Amman Private University	6163	7.87%	30
17	Amman Arab University	2475	3.16%	12
18	Philadelphia University	3650	4.66%	18
19	Khawarizmi Technical College	317	0.40%	2
20	UNRWA College of Educational Sciences	1242	1.59%	6
21	Ammon Applied University College	170	0.22%	1
22	Luminus Technical University College	619	0.79%	3
23	Al-Hussein Technical University	431	0.55%	2
24	World Islamic Sciences University	8520	10.89%	42
25	Arab Open University	2041	2.61%	10
Total	**78,295**	**100%**	**385**	

12. Results of the Hypothesis Testing

Normal Distribution Test

To verify the assumption of normal distribution for the data related to the in-

dependent and dependent variables, Kolmogorov-Smirnov (KS) test values were calculated. Table 4 shows the results:

Table 4. Kolmogorov-Smirnov normality test.

		Distribution
N		383
Normal Parameters[a,b]	Mean	1.0220
	Std. Deviation	3.85556
Most Extreme Differences	Absolute	0.030
	Positive	0.023
	Negative	-0.030-
Test Statistic		0.030
Asymp. Sig. (2-tailed)		0.200[c,d]

a. Test distribution is Normal. b. Calculated from data. c. Lilliefors Significance Correction. d. This is a lower bound of the true significance.

Data Collection Sources

To achieve the objectives of the study, two primary sources were used to collect information:

Primary Sources: These are gathered through the field study, collecting necessary data from the study population. The primary data for this study will be collected using an electronic questionnaire that was designed by the researchers and distributed to the study population.

Secondary Sources: These sources include data that was collected for purposes other than conducting the current study. They can be accessed through records within organizations, published statistics online, economic publications, books, studies, research, scientific articles, and newsletters related to the study topic, which formed the theoretical framework for this study.

Study Tool: The study will depend on a questionnaire to collect data from the study sample. The questionnaire will consist of four parts, as follows:

Part 1: Includes the demographic characteristics of the study sample, such as gender, academic qualification, and years of experience, etc.

Part 2: Consists of questions related to the independent variables.

Part 3: Includes questions related to the dependent variables.

Part 4: Includes questions related to the moderating variables.

Study Results: Characteristics of the Study Sample: The following tables show the demographic and functional characteristics of the study sample, including gender, age group, and educational qualification. The study participants were selected from the original study population according to characteristics and traits related to the study sample. The study sample was selected randomly using a simple random sampling technique, and the questionnaire was distributed electronically via Google Forms on various social media platforms. The following tables

show the statistical results for the distribution of the sample based on demographic and functional variables (gender, age group, and educational qualification):

1) Distribution of the Sample Based on Gender:

It is evident from Table 5 that the largest percentage of the study sample is female, with 60.30%, while males represent 39.70%. These results may reflect social or cultural trends in private Jordanian universities, where the female student population is generally larger or more inclined to participate in research studies. It may also indicate that females are more interested in new learning technologies such as ChatGPT, which could explain their higher representation in the study.

Table 5. Distribution of the study participants by gender.

Category	Frequency	Percentage (%)
Male	152	39.70
Female	231	60.30
Total	383	100%

2) Distribution of the Sample Based on Age Group:

Table 6 shows that the largest percentage of the study sample is in the age group 23 years and above (52%), followed by the age group from 20 to under 23 years (32.60%), and the age group under 20 years (15.40%). This can be explained by the fact that older students are more likely to be interested in adopting new technologies like ChatGPT due to their involvement in advanced academic or professional fields that require such tools. Younger students may have less exposure to these technologies or may not yet feel the need for them compared to older students, who need such tools for research and advanced education.

Table 6. Distribution of the study participants by age group.

Category	Frequency	Percentage (%)
Under 20 years	59	15.40
From 20 to under 23 years	125	32.60
23 years and above	199	52.00
Total	383	100%

3) Distribution of the Sample Based on Educational Qualification:

Descriptive Statistics of the Study Variables: This section presents the descriptive statistical results of the means, standard deviations, and ranks for the responses of the study sample concerning the independent variables (expected performance, expected effort, social influence, and facilitating conditions), the moderating variables (gender, age, experience, and voluntariness of use), and the dependent variables (behavioral intention and usage behavior). The descriptive statistics for the study variables are as follows: (Table 7)

Table 7. Distribution of the study participants by educational qualification.

Category	Frequency	Percentage (%)
First-year Bachelor's	47	12.30
Second-year Bachelor's	53	13.80
Third-year Bachelor's	41	10.70
Fourth-year Bachelor's	79	20.60
Graduate Studies (Master's, Ph.D.)	110	28.70
Higher Diploma	53	13.80
Total	383	100%

Descriptive Statistics for the Independent Variables: The mean values, standard deviations, ranks, and evaluation grades for the responses of the study participants on the independent variables (expected performance, expected effort, social influence, and facilitating conditions) are shown in Table 8.

Table 8. Mean, standard deviation, rank, and evaluation grade for the responses of the study sample according to the independent variable.

No	Dimension	Mean	Standard Deviation	Rank
1	Expected Performance	4.095	0.731	2
2	Expected Effort	4.141	0.635	1
3	Social Influence	3.869	0.868	4
4	Facilitating Conditions	3.963	0.674	3
	Overall Mean	4.025	0.594	

Table 8 shows that the responses of the study participants on the dimensions of the independent variable, as a whole, were rated as "high", with an overall mean of 4.025 and a standard deviation of 0.594. The ranking of the dimensions of the independent variable is as follows: the highest ranking is for the "expected effort" dimension, with a mean of 4.141 and a standard deviation of 0.635, followed by the "expected performance" dimension with a mean of 4.095 and a standard deviation of 0.731. The "facilitating conditions" dimension came third, with a mean of 3.963 and a standard deviation of 0.674, and the "social influence" dimension came last, with a mean of 3.869 and a standard deviation of 0.868.

Expected Performance Dimension: The mean values, standard deviations, ranks, and evaluation grades for the responses on the expected performance dimension are shown in Table 9.

Table 9 shows that the mean values for the items in the expected performance dimension range from 4.07 to 4.13, with a moderate rating on all items. The overall mean for the expected performance dimension was 4.095, with a standard deviation of 0.731, which indicates a higher-than-average rating.

Table 9. Mean, standard deviation, rank, and evaluation grade for the responses on the expected performance dimension.

No	Item	Mean	Standard Deviation	Rank
1	Using ChatGPT in education will be beneficial for my university studies.	4.07	0.836	3
2	Using ChatGPT in education will increase my chances of achieving important things in my studies.	4.13	0.857	1
3	Using ChatGPT in education will allow me to complete university-related activities faster.	4.09	0.886	2
	Overall Mean for Expected Performance	4.095	0.731	

Expected Effort Dimension: The mean values, standard deviations, ranks, and evaluation grades for the responses on the expected effort dimension are shown in Table 10.

Table 10. Mean, standard deviation, rank, and evaluation grade for the responses on the expected effort dimension.

No	Item	Mean	Standard Deviation	Rank
4	Learning and using ChatGPT in education is easy and accessible.	4.21	0.760	1
5	Using ChatGPT in education is clear and understandable for me.	4.08	0.978	4
6	I find ChatGPT easy to use.	4.17	0.759	2
7	It is easy for me to become skilled at using ChatGPT in education.	4.10	0.831	3
	Overall Mean for Expected Effort	4.141	0.635	

Table 10 shows that the mean values for the items in the expected effort dimension range from 4.08 to 4.21, with a higher-than-average rating on all items. The overall mean for the expected effort dimension was 4.141, with a standard deviation of 0.635.

Table 11. Mean, standard deviation, rank, and evaluation grade for the responses on the social influence dimension.

No	Item	Mean	Standard Deviation	Rank
8	The people and students I look up to believe that I should use ChatGPT in education.	3.86	1.005	2
9	Important students in my life think that ChatGPT should be used for future education.	3.86	1.002	2
10	People whose opinions I value prefer the use of ChatGPT in education.	3.89	0.985	1
	Overall Mean for Social Influence	3.869	0.868	

Social Influence Dimension: The mean values, standard deviations, ranks, and evaluation grades for the responses on the social influence dimension are shown in Table 11.

Table 11 shows that the mean values for the items in the social influence dimension range from 3.86 to 3.89, with above-average ratings for all items. The overall mean for the social influence dimension was 3.869, with a standard deviation of 0.868, indicating above-average agreement on all items.

4) Facilitating Conditions Dimension:

The mean values, standard deviations, ranks, and evaluation grades for the responses on the facilitating conditions dimension are shown in Table 12.

Table 12. Mean, standard deviation, rank, and evaluation grade for the responses on the facilitating conditions dimension.

No	Item	Mean	Standard Deviation	Rank
11	I will have the necessary resources to use ChatGPT in my university studies.	3.96	0.938	3
12	I have the knowledge to use ChatGPT in my university studies.	4.11	0.814	1
13	Using ChatGPT in my university studies is compatible with other technologies/applications I use.	3.94	0.916	2
14	I can receive help or intervention from others when I encounter difficulties using ChatGPT in my university studies.	3.84	0.974	4
	Overall Mean for Facilitating Conditions	3.963	0.674	

Table 12 shows that the mean values for the items in the facilitating conditions dimension range from 3.84 to 4.11, with above-average ratings for all items. The overall mean for the facilitating conditions dimension was 3.963, with a standard deviation of 0.674, indicating above-average agreement on all items.

Results for Descriptive Statistics Related to the Modified Variables

The mean values, standard deviations, ranks, and evaluation grades for the responses on the modified variables (gender, age, experience, and voluntary use) were calculated, as shown in Table 13.

Table 13. Results for the mean, standard deviation, ranks, and evaluation grades for the responses based on the dependent variable.

No	Dimension	Mean	Standard Deviation
1	Experience	2.026	0.678
2	Voluntary Use	4.040	0.703

Table 13 shows that the responses for the Experience variable as a whole were rated below average, with a mean of 2.026 and a standard deviation of 0.678. On

the other hand, the Voluntary Use variable received an above-average rating, with a mean of 4.040 and a standard deviation of 0.703.

Experience

The mean values, standard deviations, ranks, and evaluation grades for the responses on the voluntary use dimension, based on the mean values, are shown in Table 14.

Table 14. Mean, standard deviation, rank, and evaluation grade for the responses on experience.

No	Item	Mean	Standard Deviation	Rank
15	How long have you been using ChatGPT?	2.09	1.202	2
16	How would you classify yourself when using ChatGPT?	1.81	0.664	3
17	On average, how much time do you expect to use ChatGPT for education if available throughout the day?	2.18	1.081	1
	Overall Mean for Experience	2.026	0.678	

Table 14 shows that the mean values for the items in the experience dimension range from 1.81 to 2.18, with below-average ratings for all items. The overall mean for the experience dimension was 2.026, with a standard deviation of 0.678, indicating a below-average rating on this dimension.

Voluntary Usage

The results of the mean averages, standard deviations, ranks, and evaluation scores for the voluntary usage items were calculated, taking into account the order of the items based on the mean averages. The results are shown in Table 4.

Table 15. Mean average, standard deviation, rank, and evaluation score for voluntary usage items.

No.	Item	Mean Average	Standard Deviation	Rank
18	I use ChatGPT voluntarily without any pressure from others.	4.11	0.873	1
19	I believe that the supervisor at my university will not require me to use ChatGPT.	3.97	0.944	3
20	Despite the expected benefits of using ChatGPT, I believe its use is not mandatory.	4.04	0.848	2
Overall Mean for Voluntary Usage		4.040	0.703	

Table 15 shows that the mean values for the voluntary usage items ranged between 4.04 and 4.11, with an overall rating above average for all items. As a whole, the dimension had a mean of 4.040 and a standard deviation of 0.703, with an

overall rating above average.

Descriptive Statistics for the Dependent Variables

The mean averages, standard deviations, ranks, and evaluation scores for the sample respondents' responses to the dependent variable items (behavioral intention and usage behavior) were calculated, as shown in Table 4.

Table 16. Mean average, standard deviation, rank, and evaluation score for dependent variable responses.

No.	Dimension	Mean Average	Standard Deviation
1	Behavioral Intention	3.902	0.842
2	Usage Behavior	3.883	0.643

Table 16 shows that the respondents' answers regarding behavioral intention had a rating above average, with a mean of 3.902 and a standard deviation of 0.842, while the usage behavior variable also had a rating above average, with a mean of 3.883 and a standard deviation of 0.643.

The mean averages, standard deviations, ranks, and evaluation scores for the items of each dimension of the dependent variable were calculated as follows:

A) For Behavioral Intention: The mean averages, standard deviations, ranks, and evaluation scores for the items of the behavioral intention dimension were calculated, considering the order of the items based on the mean averages. The results are shown in Table 17.

Table 17. Mean average, standard deviation, rank, and evaluation score for behavioral intention items.

No.	Item	Mean Average	Standard Deviation	Rank
21	I intend to use ChatGPT frequently in my university studies.	4.18	0.774	2
22	I expect to use ChatGPT in my university studies in the future.	4.17	0.840	3
23	I plan to continue using ChatGPT for completing my university studies in the future.	4.21	0.814	1
Overall Mean for Behavioral Intention		3.902	0.842	

Table 17 shows that the mean averages for the behavioral intention items ranged between 4.17 and 4.21, with a rating above average for all items. As a whole, the dimension had a mean of 3.902 and a standard deviation of 0.842, with an overall rating above average.

B) For Usage Behavior: The mean averages, standard deviations, ranks, and evaluation scores for the items of the usage behavior dimension were calculated,

considering the order of the items based on the mean averages. The results are shown in Table 18.

Table 18. Mean average, standard deviation, rank, and evaluation score for usage behavior items.

No.	Item	Mean Average	Standard Deviation	Rank
24	I don't find it difficult to share the results of using ChatGPT with others.	3.81	0.971	3
25	I can inform others about the consequences of using ChatGPT.	3.96	0.795	2
26	The results of using ChatGPT for education are clear to me.	4.05	0.781	1
27	I would have difficulty explaining why using ChatGPT is beneficial or not.	3.71	0.985	4
Overall Mean for Usage Behavior		3.883	0.643	

13. Results and Recommendation

Results of Descriptive Analysis for the Study Variables: The results of the descriptive analysis showed that the independent variable (understanding of adopting and using ChatGPT) had an overall mean of 4.025, with the highest mean for the dimension of perceived effort (4.141). The means for the items in this dimension ranged between 4.08 and 4.21. The social influence dimension had the lowest mean (3.869), with the means for the items ranging between 3.86 and 3.89. These results are consistent with the study by Venkatesh et al. (2003) which used the Unified Theory of Acceptance and Use of Technology (UTAUT), where both studies showed that "perceived effort" plays a significant role in technology acceptance and usage, as reflected in the present study with a mean of 4.141 for this dimension. Moreover, "social influence" in both studies was found to be the least influential dimension on adoption, confirming consistency in this aspect. On the other hand, this study differs from the study by Al-Sayyid (2023), which emphasized the greater impact of "facilitating conditions" compared to "perceived effort", finding that institutional support was the most significant factor in adopting AI technologies in universities. Analyzing the results of the present study, perceived effort occupies the first place, which differs from the previous studies and shows differences in the prioritization of the most significant factors in technology acceptance.

Carrying out studies in the course of the year to determine the use of Chat GPT engage students and its effects on teaching and learning practices and behaviors, while considering moderating factors such as perceived in technology, preparedness for change, and educational level as part of constantly identifying work related challenges and academic benefits of using ChatGPT in education to enhance

students' expected performance.

Recommendations

- To enhance the usability of ChatGPT, education material and training courses should be designed and created.
- Elaborate on how studying with ChatGPT is good for students' expected performance practically and academically.
- Promote awareness to the undergraduate and graduate students in hope for them to embrace the use of the technology.
- Provide a comfortable technological context for the usage of ChatGPT must be established in terms of constant technical support and provision of the corresponding technological facilities.
- Investigation should be conducted every few months targeting the occurrence of the use of ChatGPT by students and the effects to education and learning behaviors as a way of seeking to uncover challenges that may persist in an ongoing basis, taking into account moderating variables including trust in the technology, preparedness for change, and educational level.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Abu Asr, R. (2023). Applications of Artificial Intelligence Models "ChatGPT" in Curriculum and Teaching Methods: Available Opportunities and Potential Threats. *Mathematics Education Journal, 26,* 10-23.

Abu Bakr, S. (2023). ChatGPT Technology and Labor Market Transformations: Challenges and Opportunities in the Age of Artificial Intelligence. *Al-Ma'arifa Journal, 18,* 74-94.

Al-Furani, L., & Al-Hajili, S. (2020). Factors Affecting Teachers' Acceptance of Artificial Intelligence in Education in Light of the Unified Theory of Acceptance and Use of Technology (UTAUT). *Arab Journal of Educational and Psychological Sciences, 4,* 215-252.

Al-Huwaiti, A. (2022). *The Degree of Acceptance of Faculty Members in Private Jordanian Universities for the Use of Artificial Intelligence Applications in Light of the Unified Theory of Acceptance and Use of Technology (UTAUT).* Master's Thesis, Middle East University.

Al-Sayyid, M. (2023). Attitudes of People with Determination toward Using Artificial Intelligence Technologies in Developing Their Communication Skills: The ChatGPT Technology as a Model. *Egyptian Journal of Media Research,* 161-191.

Al-Shahrani, H. (2019). Factors Affecting the Acceptance of King Khalid University Students for the Use of WhatsApp in Supporting the Educational Process in Light of the Unified Theory of Acceptance and Use of Technology. *Educational Journal, 10,* 183-218.

Chen, H., & Lin, Y. (2021). A Hybrid Model of TAM and TPB for Predicting the Adoption of AI-Based Technologies in Education. *Journal of Educational Technology Development and Exchange, 14,* 45-67. https://doi.org/10.18785/jetde.1402.04

Duaa'k, Z. (2023). *Measuring the Factors Influencing the Use of Artificial Intelligence Applications by General Education Teachers in Light of the Unified Theory of Acceptance*

and Use of Technology (UTAUT). Master's Thesis, Jazan University.

Himmel Man, K. (2023). *Is ChatGPT the Future of Teaching*?

Hussain, K., Khan, M. L., & Malik, A. (2023). Exploring Audience Engagement with Chatgpt-Related Content on Youtube: Implications for Content Creators and AI Tool Developers. *Digital Business, 4,* Article 100071. https://doi.org/10.1016/j.digbus.2023.100071

Khan, R. A., & Qudrat-Ullah, H. (2021). *Adoption of LMS in Higher Educational Institutions of the Middle East*. Springer.

Kim, H. (2023). A Study on the Intentions of ChatGPT Users Using the Extended UTAUT Model. *Journal of Digital Contents Society, 24,* 1465-1473. https://doi.org/10.9728/dcs.2023.24.7.1465

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,* e20962. https://doi.org/10.1016/j.heliyon.2023.e20962

Mukhtar, S. (2023). Factors Influencing Behavioral Intention of Customers in Booking Hotel Rooms Online: Applying the Extended Unified Theory of Acceptance and Use of Technology: A Field Study. *Al-Bashaer Economic Journal, 9,* 383-403.

Omar, S. (2023). The Acceptance of Egyptian Youth to Use ChatGPT Technology as an Artificial Intelligence Application: A Field Study. *Media Research Journal, 66,* 9-74.

OpenAI. (2022, November 30). *Introducing ChatGPT: Optimizing Language Models for Dialogue*. OpenAI Blog.

Qadir, J. (2022). Artificial Intelligence in Education: Applications and Opportunities. *Journal of Educational Technology & Society*.

Qanawi, Y. (2024). Using ChatGPT Technology as an Intelligent Tool for Data Analysis in Libraries: An Exploratory Study. *Egyptian Journal of Information Sciences, 11,* 505-540.

Strzelecki, A. (2023). To Use or Not to Use ChatGPT in Higher Education? A Study of Students' Acceptance and Use of Technology. *Interactive Learning Environments, 32,* 5142-5155. https://doi.org/10.1080/10494820.2023.2209881

Suárez, A., Jiménez, J., Llorente de Pedro, M., Andreu-Vázquez, C., Díaz-Flores García, V., Gómez Sánchez, M. et al. (2023). Beyond the Scalpel: Assessing ChatGPT's Potential as an Auxiliary Intelligent Virtual Assistant in Oral Surgery. *Computational and Structural Biotechnology Journal, 24,* 46-52. https://doi.org/10.1016/j.csbj.2023.11.058

Thabit, S. (2023). Employing the Unified Theory of Acceptance and Use of Technology in the Context of the E-Learning System: An Analytical Study of the Opinions of a Sample of Students in the College of Administration and Economics at the University of Mosul. *TANMIYAT AL-RAFIDAIN, 42*, 80-97. https://doi.org/10.33899/tanra.2023.136140.1244

Thompson, S. K. (2012). *Sampling*. Wiley.

Venkatesh, V., & Morris, M. G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly, 24,* 115-139. https://doi.org/10.2307/3250981

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27,* 425-478. https://doi.org/10.2307/30036540

Willems, J. (2023). ChatGPT at Universities—The Least of Our Concerns. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4334162