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Descriptive Analysis of the Technology Acceptance Model of ChatGPT by the Preservice Science Teachers of the University of Lagos, Nigeria

Received: 31.05.2024/ Accepted: 07.06.2024/ Published: 16.04.2025 © 2024 OLADIPO, Adenike Julianah Doi: https://doi.org/10.5281/zenodo.15229093

Abstract

ChatGPT is designed to generate human-like responses to natural language prompts, allowing it to carry out a variety of tasks, including answering questions, generating text, and engaging in conversation. This technology is new and more information are needed regarding its acceptance among people especially the preservice science teachers in the University of Lagos. The study investigated the technology acceptance model of ChatGPT by the preservice science teachers of the University of Lagos, Nigeria. Out of 1220 preservice science teachers in the Department of Science Education, University of Lagos, 488 were selected for the study using a simple random sampling technique. The study adopted the descriptive survey research design. One major instrument tagged "Technology Acceptance Model Questionnaire on ChatGPT" was designed by the researchers and used for data collection in this study. Seven research questions were raised to guide the study. The results demonstrated that the majority of preservice science teachers strongly agreed/agreed that they were aware of ChatGPT and frequently used it. More so, the participants were satisfied with ChatGPT because it sped up and made their research easier. ChatGPT was considered beneficial as it covered wide-ranging topics in the area of interest and provided relevant information related to the preservice science teachers' search done using this technology.

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Based on these results, it is recommended that sensitization programmes should be held in schools and colleges to increase teachers' level of awareness of ChatGPT and also make them comprehend the merits of utilising it. Also, users of ChatGPT should provide elaborate and specific information about their predispositions and preferences.

Keywords: *ChatGPT, technology acceptance model, awareness, perceived usefulness, perceived ease of use,*

Introduction

The Technology Acceptance Model (TAM) is a theoretical framework that explains how users accept and adopt new technologies. The model was first proposed by Fred Davis in 1989 and has since been widely used in research on technology adoption (Alambaigi & Ahangari, 2016, Oladipo & Okiki, 2020). The Technology Acceptance Model (TAM) is a widely used framework for understanding and predicting technology adoption and use. The validity of the TAM has been extensively studied in academic research and has been found to be a valid and reliable measure of technology acceptance (Scherer, Siddiq, & Tondeur, 2019). Studies have shown that the TAM is a good predictor of user acceptance and usage behavior for a wide range of technologies, including information systems, mobile apps, and ecommerce platforms (Scherer, 2019; Lee, & Lehto, 2013). Additionally, the TAM has been found to be valid across different user groups and cultures, indicating that the model is generalizable (Awofala, Oladipo, Akinoso, Arigbabu & Fatade, 2022; Alfadda, & Mahdi, 2021; Venkatesh, Thong, & Xu, 2012). However, it is important to note that the TAM has some limitations. One of the main criticisms of the TAM is that it does not account for external factors that may influence technology acceptance, such as social and cultural factors, organizational policies, and external pressures. Additionally, the TAM assumes that users are rational decision-makers who consider the benefits and costs of using a technology, which may not always be the case in real-world situations. Overall, while the TAM is a useful framework for understanding technology acceptance, it should be used in conjunction with other models and methods to fully capture the complex and multifaceted nature of technology adoption and use. ChatGPT is a new technology that warrants studying. ChatGPT refers to a large language model called "Generative Pre-trained Transformer" that was developed by OpenAI (Kasneci et al., 2023; Shafiq, 2023). It is designed to generate human-like responses to natural language prompts, allowing it to carry out a variety of tasks, including answering questions, generating text, and engaging in conversation (Sallam et al., 2023; Shafiq, 2023). The "GPT" part of the name refers to the architecture of the model, which is based on a type of neural network called a transformer, and the "Chat" part refers to its specific application for conversational tasks.

TAM proposes that users' intentions to use ChatGPT are influenced by two main factors: perceived usefulness and perceived ease of use (Awofala et al., 2022). Perceived usefulness of ChatGPT refers to the extent to which a user believes that ChatGPT will improve their job performance or quality of life. Perceived usefulness is based on an individual's perception of the potential benefits of using ChatGPT, such as increased

efficiency, reduced effort, or improved outcomes. If an individual perceives a technology as useful, they are more likely to adopt it and continue using it (Awofala et al., 2022; Su & Li, 2021). The perceived usefulness of ChatGPT is influenced by a range of factors, such as the individual's prior experience with similar technologies, their expectations of the technology, and the opinions of others. For example, if an individual has had positive experiences with similar technologies in the past, they may perceive a new technology of ChatGPT as more useful.

Perceived ease of use ChatGPT refers to the extent to which a user believes that ChatGPT will be easy to use and learn. TAM suggests that users' attitudes toward a technology are shaped by their perceptions of its usefulness and ease of use, and these attitudes in turn influence their intentions to use the technology (Al-Maroof, Alshurideh, Salloum, AlHamad, & Gaber, 2021; Alambaigi & Ahangari, 2016). The model also proposes that other factors, such as social influence and individual differences, can also influence users' attitudes and intentions. Perceived ease of use is based on an individual's perception of how easy it is to learn and use ChatGPT, such as the complexity of the interface, the amount of training required, and the degree of support available. If an individual perceives ChatGPT as easy to use, they are more likely to adopt it and continue using it.

Awareness of ChatGPT refers to an individual's knowledge and understanding of the ChatGPT that is available and its potential applications (Tella, Oyewole, & Tella, 2017). It includes awareness of the benefits and drawbacks of ChatGPT, as well as the skills and knowledge required to use it effectively. In today's rapidly changing technological landscape, awareness of ChatGPT is increasingly important. As ChatGPT emerges and becomes more prevalent, individuals who are not aware of this technology may be at a disadvantage in their personal and professional lives. On the other hand, individuals who are aware of ChatGPT and can effectively use it may have a competitive advantage. Awareness of ChatGPT can be improved through various means, such as formal education and training, self-directed learning, and exposure to ChatGPT in everyday life. Governments, educational institutions, and private organizations can also play a role in promoting awareness of ChatGPT through initiatives such as public awareness campaigns, workshops, and training programs.

Comprehensiveness and subjective norm are two additional components of the Technology Acceptance Model (TAM), in addition to perceived usefulness and perceived ease of use (Scherer, 2019; Lee, & Lehto, 2013; Park & Park, 2020; Su & Li, 2021). Comprehensiveness refers to the extent to which a user believes that ChatGPT can support all

of their required tasks or functions. In other words, if a user perceives ChatGPT as comprehensive, they believe that it can meet all of their needs and they are more likely to adopt and use it. Subjective norm refers to the influence of social norms and expectations on a user's intention to use ChatGPT. This includes the perceived expectations of important others, such as colleagues or superiors, and the degree to which these expectations align with the user's own values and beliefs. If a user perceives that others in their social network expect them to use a ChatGPT, they may be more likely to adopt and use it. Together, these four components of TAM help explain users' attitudes and intentions towards ChatGPT. By understanding these factors, designers and developers can create technologies that are more likely to be adopted and used successfully (Awofala et al., 2022). It is important to note that these components are interrelated and can influence each other - for example, if a user perceives ChatGPT as comprehensive, they may also perceive it as more useful and easier to use.

Satisfaction with ChatGPT refers to all individual's overall level of satisfaction with ChatGPT technology (Park & Park, 2020). It is an important component of the Technology Acceptance Model (TAM) and is influenced by a range of factors, such as perceived usefulness, perceived ease of use, comprehensiveness, and subjective norm (Nguyen et al., 2020). Satisfaction with ChatGPT is based on an individual's assessment of the benefits and drawbacks of using ChatGPT, as well as their expectations of ChatGPT. If an individual perceives ChatGPT as meeting their needs and improving their job performance, productivity, or quality of life, they are more likely to be satisfied with it.

Intention to use ChatGPT typically assesses the extent to which an individual intends to use ChatGPT technology or system in the future (Su & Li, 2021; Park & Park, 2020). Intention to use ChatGPT is an important predictor of actual ChatGPT adoption and use. By measuring individuals' intentions to use ChatGPT, designers and developers can gain insights into the potential success of ChatGPT and identify areas for improvement to increase its adoption and use.

The perceived enjoyment of using ChatGPT is an important factor in its adoption and continued use. To improve the perceived enjoyment of ChatGPT, developers can focus on designing the system to be engaging, entertaining, and satisfying to use. One approach is to incorporate elements of gamification into the user experience. This may involve providing rewards or incentives for using the system, such as badges, points, or levels, or creating a sense of achievement through progress tracking or completion of tasks (Su & Li, 2021; Tella, Oyewole, & Tella, 2017). Developers can also design the system to be visually appealing,

with engaging graphics, animations, or other interactive elements. No doubt, ChatGPT is one of the newest technologies in this 21st century and it is presently gaining acceptance among the populace. Its popularity and acceptance will be based on its perceived usefulness, perceived ease of use, intention, enjoyment, satisfaction, comprehensiveness and subjective norm (Tella, Oyewole, & Tella, 2017; Su & Li, 2021) which characterize the technology acceptance model. Presently, no study in Nigeria had focus on determining the acceptability of ChatGPT using the technology acceptance model. Thus, this study sought to descriptively analyse the preservice science teachers' technology acceptance model of ChatGPT at the University of Lagos, Nigeria.

Objective of the study

The general objective of this research is to engage in descriptive analysis of preservice science teachers' technology acceptance model of ChatGPT at the University of Lagos, Nigeria. The particular objectives of the research are to:

1. determine the level of awareness of preservice science teachers towards the use of ChatGPT;

2. identify the ease of use of ChatGPT among the preservice science teachers;

3. find out the perceived usefulness of ChatGPT among the preservice science teachers;

4. determine the degree of comprehensiveness and trust of ChatGPT among the preservice science teachers;

5. find out the level of satisfaction of ChatGPT among the preservice science teachers;

6. ascertain the intention to use ChatGPT among the preservice science teachers.

7. ascertain the level of perceived enjoyment of ChatGPT among the preservice science teachers.

Research questions

The following research questions guided this study:

RQ1. What is the level of awareness of preservice science teachers towards the use of ChatGPT?

RQ2. What is the level of ease of use of ChatGPT among the preservice science teachers?

RQ3. What is the level of perceived usefulness of ChatGPT among the preservice science teachers?

RQ4. What is the level of degree of comprehensiveness and trust of ChatGPT among the preservice science teachers?

RQ5. What is the level of satisfaction of ChatGPT among the preservice science teachers? RQ6. What is the intention to use ChatGPT among the preservice science teachers? RQ7. What is the level of perceived enjoyment of ChatGPT among the preservice science teachers?

Methodology

Research design

A quantitative method involving a descriptive survey research design was utilised in this study. This design is used to collect and analyse data about the characteristics, attitudes, behaviours, opinions, and perceptions of group or population. It involves collecting data through surveys or questionnaires, which typically use close-ended questions and structured response options (Awofala, 2021).

Sample and sampling technique

The target population for the study included all the preservice science teachers in the Department of Science Education of the University of Lagos, Nigeria. The target population as at 2021-2022 academic session, consisted of 1220 preservice science teachers spread across four levels: freshmen, sophomores, juniors and seniors. By a way of simple random sampling technique, the sample was drawn from the four levels. 40% participants (preservice science teachers) were selected from each of the four levels, to make a total of 488 preservice science teachers who represented the study's sample.

Data collection instrument

One major instrument was used for data collection in this study. The instrument tagged "Technology Acceptance Model Questionnaire on ChatGPT" was designed by the researchers. The survey has two sections namely, A and B. Section A deals with the biodata of the respondents including gender, age and level of study. Section B centres on the variables of the study and is further divided into sub-sections consisting of Awareness of ChatGPT (5 items); Perceived usefulness of ChatGPT (5 items); Perceived usefulness and subjective norm of ChatGPT (5 items); Satisfaction with ChatGPT (5 items); Intention to use ChatGPT (4 items); and Perceived Enjoyment of ChatGPT (4 items). Each of these subsections adopted a Likert-type scale format of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) for all items of the survey.

Validity of the instrument

The instrument was given to two experts in measurement and evaluation to determine its content and construct validity. The experts checked for language appropriateness and the usability of the instrument for the target audience. Little or no modifications were made on the instrument as the experts adjudged the instrument okay for the intended audience.

Reliability of the instrument

To determine the reliability of the instrument, internal consistency method of Cronbach alpha was adopted. The instrument was administered on 50 preservice science teachers not part of the study's sample and their responses were coded on the SPSS version 25 and the default Cronbach alpha was used to compute the instrument reliability coefficient. A value of 0.87 was computed for the study. This value was adjudged high enough for the instrument and so the instrument was highly reliable for collecting data for the study.

Data collection procedures

Permission was sought from the Head, Department of Science Education, University of Lagos to use the preservice science teachers for research purpose. The instrument tagged Technology Acceptance Model Questionnaire on ChatGPT was administered by the researchers to target participants in regularly schedule classes. The administration of the questionnaire was itch-free and no attrition was recorded as all the participants fully participated in the study that was conducted during the second semester of 2021-2022 academic session. 488 questionnaires were administered and retrieved from the participants indicating a 100% return rate.

Methods of data analysis

The responses of the participants to the questionnaire were coded on the SPSS version 25 and the coded data were analysed based on the research questions set for the study. Descriptive statistics of percentage and frequency were adopted in the analysis of the data collected for the study.

Results

Research Question One: What is the level of awareness of preservice science teachers towards the use of ChatGPT?

Table 1 shows that 488 (100%) preservice science teachers were sampled and out of this sample size, 372 (76.2%) participants strongly agreed/agreed to have awareness of Chat GPT, 52 (10.7%) participants were undecided to having aware, and 64 (13.1%) strongly disgreed/disagreed to having awareness. This showed that the majority of the participants were aware of ChatGPT. Out of all the participants, 268 (54.9%) strongly agreed/agreed that they can use ChatGPT. A total of 100 (20.5%) participants were undecided about using ChatGPT, 120 (24.6%) participants strongly disagreed/disagreed to using ChatGPT. This showed that the majority of the participants can actually make use of ChatGPT. As regards the familiarity with ChatGPT, 304 (62.3%) participants were familiar with ChatGPT, 80 (16.4%) of the participants were undecided about their familiarity with ChatGPT, while 104 (21.3%) of the participants were unfamiliar with ChatGPT. This showed that the majority of the participants were accustomed to ChatGPT. Similarly, 404 (82.8%) participants strongly agreed/agreed to have heard about ChatGPT, 16 (3.3%) participants were undecided while 68 (13.9%) participants did not hear about ChatGPT. This confirmed that the majority of the participants had heard about ChatGPT. Furthermore, the results showed the ratio of participants that knew something about ChatGPT. A total of 320 (65.5%) participants strongly agreed/agreed to know something about ChatGPT, 80 (16.4%) participants were undecided regarding knowing something about ChatGPT while 88 (18.0%) participants strongly disagreed/disagreed to know something about ChatGPT. This established that the majority of the participants knew something about ChatGPT.

Awareness	SA/A	SA/A U		D/	SD		
I	n %	n	%	n	%		
1. I am aware of ChatGPT	372	76.2	52	10.7	64	13.1	
2. I can make use of ChatGPT	268	54.9	100	20.5	120	24.6	
3. I am familiar with ChatGPT	304	62.3	80	16.4	104	21.3	
4. I have heard about ChatGPT	404	82.8	16	3.3	68	13.9	
5. I know something about ChatGPT	320	65.5	80	16.4	88	18.0	

Table1. The level of awareness of ChatGPT

Research Question Two: What is the level of perceived ease of use of ChatGPT among the preservice science teachers?

Table 2 reveals the perceived ease of use of ChatGPT among the undergraduate science education students of the University of Lagos. A total of 284 (58.2%) participants strongly agreed/agreed to finding ChatGPT easy to use; 116 (23.8%) participants were undecided regarding the easy use of ChatGPT, while 88 (18.0%) did not find ChatGPT easy to use. Subsequent upon these results, it is clear that the majority of the participants found ChatGPT easy to use. Regarding the mental effort needed to interacting with ChatGPT, 292 (59.8%) participants strongly agreed/agreed that interacting with ChatGPT does not require a lot of mental effort, 128 (26.2%) participants were undecided with the statement, while 68 (13.9%) participants strongly disagreed/disagreed with the statement that ChatGPT does not require a lot of mental effort in its interaction. This showed that the majority of participants strongly agreed/agreed that interacting with ChatGPT does not necessarily require a lot of mental effort.

In addition, Table 2 reveals that 276 (56.6%) participants strongly agreed/agreed to finding it easy getting what they want on ChatGPT, 136 (27.9%) were undecided to finding it easy getting what they want on ChatGPT, while 76 (15.6%) participants strongly disagreed/disagreed to finding it easy to get what they want on ChatGPT. With this, it is confirmed that the majority of the participants found it easy to get what they want on ChatGPT. Yet, 296 (60.6%) participants strongly agreed/agreed to finding it easy to understand ChatGPT, 120 (24.6%) participants were undecided regarding the statement, while 72 (14.8%) participants strongly disagreed/disagreed to finding it easy to understand the ChatGPT. This showed that the majority of the participants found ChatGPT easy to understand. A total of 312 (63.9%) participants strongly agreed/agreed to finding it easy to learn to use ChatGPT, 112 (23.0%) were undecided to finding it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT. This showed that the majority of the participants found it easy to learn to use ChatGPT.

Perceived ease of use	SA/A	SA/A		U		D/SD		
	n	%	n	%	n	%		
1. I find ChatGPT is easy to use		284	58.2	116	23.8	88	18.0	

Table 2. Perceived ease of use ChatGPT

2. Interacting with ChatGPT does not require	e 292	59.8	128	26.2	68	13.9
a lot of mental effort						
3. I find it easy to get ChatGPT to do what	276	56.6	136	27.9	76	15.6
I want it to do						
4. I find it easy to understand ChatGPT	296	60.6	120	24.6	72	14.8
5. Learning to use ChatGPT is easy for me	312	63.9	112	23.0	64	13.1

Research Question Three: What is the level of perceived usefulness of ChatGPT among preservice science teachers?

The results in Table 3 show that out of 488 (100%) participants, 348 (71.3%) strongly agreed/agreed that using ChatGPT enables quick completion of research, 84 (17.2%) were undecided that ChatGPT enables quick completion of research, while 56 (11.5%) participants strongly disagreed/disagreed that ChatGPT enables quick completion of research. This confirms that the majority of the participants strongly agreed/agreed that ChatGPT enables quick completion of research. This confirms that the majority of the participants strongly agreed/agreed that ChatGPT enables quick completion of research. In terms of research, 344 (70.5%) participants strongly agreed/agreed to ChatGPT making it easier for them to do their research, 84 (17.2%) participants were undecided that ChatGPT makes their research work easier, while 60 (12.3%) participants strongly disagree/disagreed with the statement. These statistics show that the majority of participants strongly agreed/agreed that ChatGPT makes doing their research easier. The results also reveal that out of the 488 (100%) participants, 340 (69.7%) strongly agreed/agreed that using ChatGPT enhances their searching effectiveness, 88 (18.0%) participants were undecided with the statement, while 60 (12.3%) participants strongly disagreed that ChatGPT enhances their searching effectiveness. Thus, the majority of the participants believed that ChatGPT enhances their searching effectiveness.

For usefulness of any research, relevant information to aid in the research is vital. Table 3 shows that 332 (68.0%) participants strongly agreed/agreed to finding many relevant information with one search on ChatGPT, 92 (18.9%) participants were undecided with this statement, while 64 (13.1%) strongly disagreed/disagreed to finding many relevant information on ChatGPT with one search. These statistics show that the majority of the participants strongly agreed/agreed to find many relevant information on ChatGPT with one search. The results also reveals that 280 (57.3%) participants strongly agreed/agreed that the resources found in ChatGPT are quite related to their research, 144 (29.5%) were undecided, while 64 (13.1%) participants strongly disagreed/disagreed that the resources found in ChatGPT are quite related with their research. These statistics confirmed that the majority of

the participants believed that the resources found in ChatGPT are quite related with their research.

Perceived usefulness	SA/	A	U		D	/SD
	n	%	n	%	n	%
1. ChatGPT enables quick completion of	348	71.3	84	17.2	56	11
research						
2. ChatGPT makes research work easier	344	70.5	84	17.2	60	12.3
3. Using ChatGPT enhances my searching	340	69.7	88	18.0	60	12.3
effectiveness						
4. I can find many relevant information	332	68.0	92	18.9	64	13.1
with one search in ChatGPT						
5. The resources in ChatGPT relate well	280	57.3	144	29.5	64	13.1
to my research						

Table 3. Perceived usefulness of ChatGPT

Research Question Four: What is the level of comprehensiveness and subjective norm of ChatGPT among preservice science teachers?

Table 4 shows the level of comprehensiveness and subjective norm of ChatGPT among the undergraduate science education students of the University of Lagos. The table shows that 324 (66.4%) participants strongly agreed/agreed to easily understanding the resources found on ChatGPT, 108 (22.1%) participants were undecided regarding the statement, while 56 (11.5%) participants strongly disagreed/disagreed to understanding the resources found on ChatGPT. These statistics show that the majority of the participants found it easy to understand resources on ChatGPT. The table also reveals that 248 (50.8%) participants strongly agreed/agreed that ChatGPT has enough resources for their study, 144 (29.5%) were undecided, while 96 (19.7%) participants strongly disagreed/disagreed that ChatGPT has enough resources for their study. This reveals that the majority of the resources for their study.

268 (54.9%) participants strongly agreed/agreed that ChatGPT covers a wide-ranging topic in their particular area of interest, 148 (30.3%) were undecided, while 72 (14.8%)

participants strongly disagreed/disagreed that ChatGPT covers a wide range of topics in their particular area of interest. More so, 248 (50.8%) of the participants strongly agreed/agreed to often find exactly what they search for on ChatGPT, 172 (35.2%) were undecided, while 68 (13.9%) participants strongly disagreed/disagreed with the statement that they often find exactly what they search for on ChatGPT. This confirmed that the majority of the participants did find exactly what they search for on ChatGPT. Of the participants, 324 (66.4%) strongly agreed/agreed that ChatGPT usually provides details and in-depth information to them, 108 (22.1%) participants were undecided regarding the statement, while 56 (11.5%) participants strongly disagreed/disagreed that ChatGPT usually provides details and in-depth information to them. This result showed that the majority of the participant were of the belief that ChatGPT usually provided details and in-depth information to them.

Comprehensiveness & subjective		SA/A	U		D	0/SD
	n	%	n	%	n	%
1. The resources on ChatGPT are	324	66.4	108	22.1	56	11.5
easy to understand						
2. ChatGPT has enough resources	248	50.8	144	29.5	96	19.7
for my study						
3.ChatGPT covers a wide range	268	54.9	148	30.3	72	14.8
of topics in my particular interest						
4.I often find exactly what I search						
for while using ChatGPT	248	50.8	172	35.2	68	13.9
5.ChatGPT usually provides detail						
and in-depth Information	324	66.4	108	22.1	56	11.5

Table 4. Comprehensiveness and subjective norm of ChatGPT

Research Question Five: What is the level of satisfaction with ChatGPT among preservice science teachers?

The results in Table 5 show the level of satisfaction of the undergraduate science education students of the University of Lagos while using ChatGPT. Out of the 488 participants, 260 (53.3%) participants strongly agreed/agreed that they made the correct

decision to use ChatGPT, 164 (33.6%) participants were undecided, while 64 (13.1%) participants thought they did not make the correct decision to use ChatGPT. This reveals that the majority of the participants believed that they made the correct decision by using ChatGPT. Also, 268 (54.9%) participants strongly agreed/agreed that they are satisfied with the results received from ChatGPT, 156 (32.0%) participants were undecided, while 64 (13.1%) participants strongly disagreed/disagreed of being satisfied with the results received from ChatGPT. Thus, the majority of the participants were satisfied with ChatGPT results.

The table also shows that 268 (54.9%) participants strongly agreed/agreed and indicated overall satisfaction with ChatGPT, 156 (32.0%) participants were undecided regarding the statement, while 64 (13.1) participants strongly disagreed/disagreed to being satisfied using ChatGPT. This showed that a considerable majority of the participants were satisfied with using ChatGPT. 304 (62.3%) participants strongly agreed/agreed that they were happy with the performance of ChatGPT, 124 (25.4%) participants were undecided, while 60 (12.3%) participants were not happy with the performance of ChatGPT. Thus, the majority of the participants believed that they were happy with the performance of ChatGPT. 288 (59.0%) of the participants strongly agreed/agreed that using ChatGPT was a positive experience for them, 136 (27.9%) participants were undecided regarding the statement, while 64 (13.1%) participants strongly disagreed/disagreed that using ChatGPT was a positive experience for them.

Satisfaction	SA	A/A	U		D/S	D
	n	%	n	%	n	%
1. I think I made the correct decision to	o 260	53.3	164	33.6	64	13.1
use ChatGPT						
2.In general, I am satisfied with the	268	54.9	156	32.0	64	13.1
results I received from ChatGPT						
3. Overall, I am satisfied using ChatGP	T 268	54.9	156	32.0	64	13.1
4.I am happy with the performance 3	04	62.3	124	25.4	60	12.3
of ChatGPT						
5.Using ChatGPT was a positive 2	88	59.0	136	27.9	64	13.1
experience for me						

Table 5. Satisfaction with ChatGPT

Research Question Six: What is the level of intention to use ChatGPT among preservice science teachers?

Table 6 shows the level of intention to use ChatGPT among presrvice science teachers at the University of Lagos. The table reveals that 312 (63.9%) participants strongly agreed/agreed to use ChatGPT in the future, 132 (27.0%) participants were undecided while 44 (9.0%) participants strongly disagreed/disagreed that they intend to use ChatGPT in the future. Thus, the majority of the participants agreed that they have intention to use ChatGPT in the future. 336 (68.9%) participants strongly agreed/agreed that they plan to use ChatGPT in the near future, 112 (23.0%) participants were undecided, while 40 (8.2%) participants strongly disagreed/disagreed that they planned to use ChatGPT in the near future. Thus, the majority of the participants believed that they planned to use ChatGPT in the near future. 304 (62.3%) participants strongly agreed/agreed that they expect to use ChatGPT in the next time frame, 124 (25.4%) participants were undecided, while 60 (12.3%) participants strongly disagreed/disagreed that they would use ChatGPT in the next time frame. Thus, the majority of the participants believed that they would use ChatGPT in the next time frame. 292 (59.9%) participants strongly agreed/agreed that they are likely to use ChatGPT in their work and personal life, 152 (31.1%) participants were undecided regarding this statement, while 44 (9.0%) participants strongly disagreed/disagreed that they would likely use ChatGPT in their work and personal life. Thus, the majority of the participants agreed that they would likely use ChatGPT in their work and personal life.

Intention	SA/A	-	U		D/S	SD
	n	%	n	%	n	%
1. I intend to use ChatGPT in the future	312	63.9	132	27.1	44	9.0
2. I plan to use ChatGPT in the near future	336	68.9	112	23.0	40	8.2
3. I expect to use ChatGPT in the next time :	frame 304	62.3	124	25.4	60	12.3
4. I am likely to use ChatGPT in my work an	nd					
personal life.	292	. 59.9	152	31.1	44	9.0

Table 6. Intention to use ChatGPT

Research Question Seven: What is the level of perceived enjoyment of ChatGPT among preservice science teachers?

Table 7 shows the level of perceived enjoyment of ChatGPT among preservice science teachers at the University of Lagos. 304 (62.3%) participants strongly agreed/agreed that using ChatGPT is fun, 116 (23.8%) participants were undecided, while 68 (13.9%) participants strongly disagreed/disagreed that using ChatGPT is fun. Thus, the majority of the participants believed that using ChatGPT was fun. 284 (58.2%) participants strongly agreed/agreed that using ChatGPT is pleasurable, 136 (27.9%) participants were undecided, while 68 (13.9%) participants strongly disagreed/disagreed that using ChatGPT is pleasurable, 136 (27.9%) participants were undecided, while 68 (13.9%) participants strongly disagreed/disagreed that using ChatGPT give them a lot of enjoyment, 156 (32.0%) participants were undecided regarding the statement while 72 (14.8%) participants strongly disagreed/disagreed that using ChatGPT give them a lot of enjoyment. Lastly, 264 (54.1%) participants strongly agreed/agreed that using ChatGPT make them excited, 144 (29.5%) participants were undecided regarding the statement, while 80 (16.4%) participants strongly disagreed/disagreed that using ChatGPT make them excited. Overall, the majority of the participants accepted that using ChatGPT make them excited.

Perceived enjoyment	SA/A U		[D/	SD			
	n	%	n	%	n	%		
1. Using ChatGPT is fun.		304	62.3	116	23.8	68	13.9	
2. Using ChatGPT is pleasurable.		284	58.2	136	27.9	68	13.9	
3. Using ChatGPT gives me a lot of		260	53.2	156	32.0	72	14.8	
enjoyment.								
4. Using ChatGPT makes me excited		264	54.1	144	29.5	80	16.4	

Table 7. Perceived enjoyment of ChatGPT

Discussion

The results from the study showed that the majority of the preservice science teachers strongly agreed/agreed that they are aware of ChatGPT and frequently make use of it. This result concurs with the submission of Shafiq (2023) that ChatGPT is gradually gaining popularity among its users; as people are becoming heavily dependent on the use of ChatGPT

for accessing information. One overwhelming fact that ChatGPT usually provides the information requirements of the research might be the reason for its acceptance on the part of the participants in the present study. Any technology that allows users to get what they want and provides the information the users want do not necessarily need any commercial because those are enough advertisement by themselves (Tella et al., 2017). This is the position of ChatGPT as it has been revealed in the present study. That the participants in the present study have enough trust in ChatGPT as a technology for searching relevant information concurs with the submission of researchers that participants found ChatGPT easy to use and access and that ChatGPT is perceived as a useful technology for their research because it enhanced their searching potency and efficiency (Shen, 2012; Tella et al., 2017). Beyond any doubt, ChatGPT is an echt scrutiny instrument; hence, it is unanticipated that the participants in this study regarded it as being reliable for research work and it promotes their search efficiency.

The results from this study revealed the ceaseless purpose of using ChatGPT. This concurs with the submission of Awofala and Oladipo (2023), Shafiq (2023) and Awofala et al. (2022) that many factors affect the intention to use any technology including perceived usefulness, perceived ease of use and sense of loyalty towards the use of the technology. Literature shows that any technology that is perceived useful would enjoy continuous patronage from its users. Hence, any technology that is very easy to use and access will enjoy constant patronage from its users (Awofala et al., 2022; Tella et al., 2017). Consequently, the need for the constant intention to use ChatGPT by the preservice science teachers in the present study is not startling. It is evident that any technology that is easy to use and access (Awofala et al., 2023; Abiodun, Asanre & Awofala, 2023; Awofala et al., 2022; Tella et al., 2017) will increase the rationale for the intention of the user to use the ChatGPT. The results in the present study showed the overall satisfaction with ChatGPT by the preservice science teachers. Without doubt, the ChatGPT perceived usefulness with regards to the provision of pertinent information, satisfying users' needs, ease of use and access, and its comprehensiveness and subjective norm of ChatGPT by the preservice science teachers may be the reason for the general satisfaction the participants in this study showed with ChatGPT. In the present study, the results indicated that the participants agreed that ChatGPT made research quicker and easier. They also agreed that ChatGPT is fun, pleasurable, gives enjoyment and makes its users excited. Despite the advantages of ChatGPT, it has been criticised for giving incorrect answers, biased answers, lack of human insights and overly long wordy answers characterised the use of ChatGPT (Shafiq, 2023). Also, ChatGPT has

been criticised for becoming a disruption for online assessment as it engenders opportunity for plagiarism and cheating among students (Naidu & Sevnarayan, 2023).

Recommendations

In line with the results of this investigation, the following recommendations were made: Sensitization programmes should be held in schools and colleges to increase the level of awareness of people about ChatGPT and also make them comprehend the merits of utilising ChatGPT. Users of ChatGPT should provide elaborate and specific information about their predispositions and preferences. Providing more information will enhance the performance of ChatGPT to provide personalised preferences. Users should regularly provide feedback to ChatGPT and they should explore the recommended content and keep an open mind while using the ChatGPT for improved services. This will in turn boost the satisfaction level of the preservice science teachers using ChatGPT and increase the trust they have in using ChatGPT.

Conclusion

The present study investigated the technology acceptance model of ChatGPT by preservice science teachers in the University of Lagos. In this study, the results showed that preservice science teachers were aware of the use of ChatGPT and can freely use it to get relevant information needed in their study. More so, the participants were satisfied with their use of ChatGPT as it does speed up and make their research easier. ChatGPT was considered useful because it covers wide ranging topics in the area of interest, and they also find relevant information related to their search using ChatGPT.

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