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A comparative analysis between ChatGPT & Google as learning platforms: The role of mediators in the acceptance of learning platform

Said A. Salloum[a*], Raghad Alfaisal[b], Rana Saeed Al-Maroof[c], Rima Shishakly[d], Mohammed Almaiah[e*] and Romel Al-Ali[f*]

[a]*School of Science, Engineering, and Environment, University of Salford, United Kingdom*
[b]*Faculty of Computing and Meta-Technology, Universiti Pendidikan Sultan Idris Tanjung, Malim, Malaysia*
[c]*English Language & Linguistics Department, Al Buraimi University College, Al Buraimi, Oman*
[d]*Management Department, College of Business Administration, Ajman University, Ajman 346, United Arab Emirates*
[e]*King Abdullah the II IT School, The University of Jordan, Amman 11942, Jordan*
[f]*Associate Professor, The National Research Center for Giftedness and Creativity, King Faisal University, Saudi Arabia*

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A B S T R A C T

Advancements in technology have had a profound impact on the way we learn, teach, and access knowledge. From online learning platforms to interactive educational games and virtual reality simulations, technology has transformed the traditional classroom into a dynamic, engaging, and inclusive space for education. One of the promising advancements in the field of artificial intelligence technology is ChatGPT which offers personalized and effective learning experiences by providing students with customized feedback and explanation. The effect of ChatGPT must be compared with the effect of Google at the educational level since both present a source of information and explanation. Thus, this study aims at investigating the differences between these two learning sources to measure their effectiveness from different perspectives. The model proposed in this study was evaluated using the PLS-SEM approach, utilizing data collected from 153 university students in the UAE. The results of this evaluation indicate that the GPT (Generative Pre-trained Transformer) has a significant impact on user acceptance, mediated by information quality, system quality, perceived learning value, and perceived satisfaction. These factors play a crucial role in determining users' acceptance of the GPT. However, it is important to note that some aspects of the model were not supported, suggesting that they do not have a significant predictive effect on the use of ChatGPT. Nonetheless, the findings of this study contribute to the existing literature on AI and environmental sustainability, providing valuable insights for practitioners, policymakers, and AI product developers. These insights can help guide the development and implementation of AI technologies in a way that aligns with users' needs and preferences while considering the larger environmental context.

1. Introduction

Artificial intelligence has developed into a tool that transforms people's lives (Al-Maroof et al., 2021). The ChatGPT which is Chat Generative Pre-trained Transformer is an example of this development. The significance of ChatGPT is its capability to provide students with term papers, short stories, explanations and novels (Al-Marzouqi et al., 2024). The comprehensive reports and explanations that are given by this tool have caused panic and fear at American University. According to them, this tool can write acceptable quality paragraphs and college-level research papers as well as answering test questions McGee (2023).

* Corresponding author.
E-mail address Salloum78@live.com (S. A. Salloum) ralali@kfu.edu.sa (R. Al-Ali) m.almaiah@ju.edu.ju (M. Almaiah)

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The integration of natural language processing (NLP) models in the educational sector has the potential to significantly enhance information accessibility for educators, students, and academic staff (Surameery & Shakor, 2023). This tool offers distinct advantages when compared to traditional platforms like Google. One of the influential differences is the fact that the recent ChatGPT has gained widespread popularity. In addition, it has a wide range of resources including books, articles and websites. The fact that ChatGPT can incorporate the complexity of students' intentions and the high level of proficiency of responses enable students to use it to fulfil various purposes (Dowell & Kovanovic, 2022).

The role of ChatGPT has been investigated from various perspectives, including medical (Salloum et al., 2024a), educational (Alfaisal et al., 2024), and engineering (Qadir, 2022). Previous studies have proposed that the effect of ChatGPT has influenced the users (Choudhury & Shamszare, 2023), students (Castillo et al., 2023), doctors (Iftikhar et al., 2023), patients (Garg et al., 2023) and others (Giordano et al., 2024). However, it has its limitations and users have aroused certain concern reading ethical issues and creativity (Al Saidat et al., 2024; Salloum et al., 2024b). Table 1 presents a detailed comparative analysis between Google and ChatGPT, showcasing their unique roles as educational tools within digital learning environments. Google, as a search engine, offers extensive access to a wide array of information, ideal for research-based learning. In contrast, ChatGPT, operating as a conversational AI, provides a more personalized and interactive experience, catering to adaptive learning styles. This comparison highlights how each tool meets different educational needs, from broad information gathering to tailored, interactive learning experiences. Understanding these distinctions helps educators and learners effectively integrate these technologies to enhance educational outcomes.

Table 1
Comparative analysis of Google and ChatGPT as educational tools

Feature	Google	ChatGPT
Type of Tool	Search Engine	Conversational AI
Primary Function	Provides access to a broad range of information	Delivers personalized interaction and responses
User Interaction	User inputs query and receives a list of links to external content	Engages in a dialogue with users to provide explanations and answers
Learning Style Supported	Self-directed and research-based learning	Interactive and adaptive learning
Content Delivery	Non-interactive, text-based results	Dynamic, conversational outputs that can adapt based on user feedback
Customization	Limited to search algorithms and user queries	High level of customization in responses based on ongoing interaction
Strengths	Vast range of data and information access; good for research and exploration	Engages learners in a two-way conversation, enhances understanding through tailored explanations
Limitations	Less tailored to individual learning needs; can overwhelm with the breadth of information	Requires specific questions to guide the discussion; may not cover as broadly as a search engine
Ideal Educational Use	Research projects, exploration of a wide range of topics	Concept reinforcement, language learning, problem-solving assistance

Therefore, this study aims to explore the differences in data obtained from two distinct learning sources: Google and ChatGPT. The model that is designed for this purpose depends on two mediators which are task technology fit and personal innovativeness. Task technology fit is a mediator between information quality and system information, whereas personal innovativeness is the mediator between perceived learning value and perceived satisfaction. To the best of our knowledge, previous studies have not been conducted in the field of education using two mediators and other influential components.

To effectively set the stage for this study, it is crucial to emphasize the relevance of comparing Google and ChatGPT within educational contexts. Both platforms, though fundamentally different—Google as a comprehensive search engine (Atlas, 2023), and ChatGPT as a conversational AI—serve pivotal roles in information dissemination and personalized learning (Al Saidat et al., 2024). This comparison not only bridges a significant research gap but also highlights how each platform supports diverse educational needs and learning styles. By evaluating their effectiveness from multiple perspectives, this research aims to provide a nuanced understanding of their respective impacts on education. The findings are expected to contribute to the literature by delineating the unique advantages and limitations of each tool, thereby guiding future technology integration strategies in educational settings and fostering a deeper engagement with digital learning environments.

2. Literature Review

2.1 The Significance of ChatGPT VS Google as a Source of Information

The development of ChatGPT has provided chances to use a trained huge amount of textual data from the internet to generate text that mimics natural human language (Salloum et al., 2024c). The use of multiple processing tasks which may vary from language translation, and text summarization, to dialogue systems and practical feedback, has made ChatGPT a more influential tool from different perspectives (Bhattacharya et al., 2023). Even though ChatGPT is widely spread and used by people all over the world, many researchers have admitted that the ChatGPT is a dangerous tool that is considered a threat to the future of education because it has negative effects on many technical creators, teachers and professional, hence, the perception of ChatGPT use in academics is not encouraging due to ethical issues and creativity concerns (Castillo et al., 2023).

The use of ChatGPT will lessen the level of students' creativity as it is a tool that can provide multiple tasks at the same time (Seth et al., 2023).

Google as a source of information has implemented several tools to serve the developing needs of users. Therefore, Google has launched Google Maps, Google Scholar and Google Books Google Scholar (GS) is considered a free scholarly literature retrieval source that enables researchers to use many studies as compared to controlled databases such as Scopus, Web of Science (WOS) and others. Thus, GS is capable of citation tracking in addition to its ability to produce reliable metrics. The GS has significantly been expanded to cover a powerful database of scholarly literature. However, some weaknesses have emerged over the years. One of these weaknesses is related to GS itself as resources indexed whose policy remains known. The second weakness is related to the limited nature of GS as compared to other artificial intelligence tools that can do multiple tasks. Other Google websites such as Google Maps and Google Books are used for different purposes Ashraf & Ashfaq (2024).

2.2 Recent Views on ChatGPT

The role of ChatGPT has been the concern of many researchers in different settings. The health field has been affected by ChatGPT. The potential radical development in ChatGPT has affected the medical information for both health professionals and patients because it can provide a vast amount of information that can range from theoretical issues to more practical medical advice and consultation Giordano et al. (2024). Al the medical level, ChatGPT has unique characteristics that set it apart from traditional sources of information such as customized feedback on patient-relevant cases, personalized learning, and specialized realistic virtual simulation (Khan et al., 2023). In medical education, the ChatGPT can do significant actions such as scoring students' papers and essays by analyzing the sentence structure, vocabulary, grammar, and clarity of a paper, teaching students by providing quizzes and tests, creating create virtual tutors who are capable of answering students' questions and providing feedback on their work, finally generating case studies and scenarios which may assist medical students in diagnostic and treatment planning abilities (Biswas, 2023).

In the educational engineering setting, ChatGPT is seen as a threat that may change educational ethics. Its capabilities to write and debug software threaten the livelihood of software engineers. Thus, the ChatGPT is an impressive tool in engineering but it is flawed and it necessitates the demand that engineering educators have to understand the implications of this technology and study how to adapt engineering education can guarantee that the next generation of engineers can take advantage of the benefits to minimize any negative consequences (Alfaisal et al., 2024).

3. The Theoretical Framework

The current framework emphasizes how both task technology fit and personal innovativeness mediate the relationships between system and information quality and the acceptance of learning platforms. Task technology fit serves as a mediator between the system and information quality and acceptance of learning platforms, while personal innovativeness acts as a mediator between perceived usefulness and learning value and acceptance of learning platforms. Additionally, other relationships are also explored to assess the effectiveness of each platform, highlighting the advantages of using each platform.

3.1 The System Quality, Information Quality and Task Technology Fit

The system quality is characterized by certain features that make technology remarkably significant. They include reliability, usability, and functionality which may affect positively the likelihood of accepting and adopting the technology. The reliability feature implies that users perceive the technology as useful, hence, they have a high level of confidence in the technology. If the system is perceived as unreliable, users may be hesitant to rely on it for important tasks or decision-making processes. The usability feature is a critical one that relies on the easiness of the system. If the system is evaluated as useful, easy to use that has obvious instructions, the user's interest in the technology will be increased. The functionality feature is a key factor that enables users to effectively understand and work on the technology properly (Pai & Huang, 2011; Bray & Parkin, 2009). Overall, a high level of system quality can increase user confidence in technology. The ongoing monitoring and testing of the system along with users' feedback and input can identify areas for improvement and ensure that the technology continues to meet the needs of its users.

Information technology is closely related to the degree that the information is perceived as accurate, relevant and reliable. It evaluates the type of information that is provided by the technology which can be classified as more significant or less significant. Whenever the information is classified as significant and updated, the technology users perceive the information as precise, complete and comprehensive. The quality of information can have a significant impact on the acceptance and use of technology. When users perceive the information provided by a technology to be of high quality, they are more likely to accept and adopt the technology (Padayachee et al., 2010; Salloum et al., 2019). There are several factors that can influence the quality of information provided by technology. These include the accuracy and completeness of the data, the reliability of the sources, and the timeliness of the information. In addition, the usability and user-friendliness of the technology can also affect the quality of the information provided. For example, if technology is difficult to use or navigate, users may struggle to find the information they need or may be more likely to make errors when entering data (Khan et al., 2023; Biswas, 2023).

Task technology is a measure of how well a technology meets the users' needs and enhances their work process and it is based on a relation between two attributes which are the capabilities of the technology and the required tasks. The implementation of the technology is based on the users' activity which implies that experienced users are attracted to tools and methods that enhance their future work and complete the task with the greatest benefit. Therefore, the technology that does not fit into the users' needs and expectations will not be sufficient, hence it will not be accepted by the users. Accordingly, task technology fit has a degree of compatibility that coincides with the task. The higher the level of compatibility is, the higher the benefits that are achieved using technology. Between a particular technology and the tasks that need to be performed using that technology. It is a measure of how well a technology meets the needs of users and supports their work processes (Pai & Huang, 2011; Bray & Parkin, 2009). Though many studies have dealt with the task technology fit but few of them have made a relation between it and other crucial factors that have been explained earlier. Rather, they confirm the mediating role of perceived usefulness and perceived ease of use on task-technology fit (Lederer et al., 2000). Thus, the current study pinpoints the mediating role of the task technology fit between the system and information quality on one hand, and the acceptance of ChatGPT and Google as learning platforms on the other hand.

Task technology fit and information quality are two key factors that can impact the effectiveness and efficiency of the technology used in completing tasks. A good fit between technology and task requirements, coupled with high-quality information provided by the technology, can enhance productivity, streamline workflows, and improve outcomes. The relationship between task technology fit and information quality are mutually reinforcing. When technology is well-suited to the task at hand, it is more likely to provide high-quality information that meets the needs of users. Conversely, when high-quality information is provided, it can enhance the fit between technology and task by making it easier for users to complete their work (Almaiah et al., 2022).

To ensure good task technology fit and high-quality information, it is important to carefully consider the requirements and characteristics of the tasks that need to be performed, as well as the capabilities and limitations of the technology being used. Similarly, the relation between task technology fit and system quality has to be investigated to enhance the effectiveness of the offered technology focusing on the crucial characteristics that set a singular technology apart from others. Accordingly, the proposed hypotheses are:

H_{1a}: *There is a more significant relation between system quality and information quality with ChatGPT acceptance than Google acceptance in the learning process.*
H_{2a}: *There is a more significant relation between information quality of ChatGPT acceptance than Google acceptance.*
H_{3a}: *There is a more significant relation between the information quality of ChatGPT acceptance than Google acceptance, mediated by task technology fit.*
H_{4a}: *There is a more significant relation between system quality of ChatGPT acceptance than Google acceptance, mediated by task technology fit.*
H_{5a}: *There is a more significant relation between system quality of ChatGPT acceptance than Google acceptance.*
H_{6a}: *There is a more significant relation between task technology fit of ChatGPT acceptance than Google acceptance.*

3.2 The Perceived Satisfaction, Perceived Learning Value and Personal Innovativeness

Perceived satisfaction is defined as the degree to which technology users are satisfied with the implemented task and offered services. When users perceive technology to be satisfying, they are more likely to continue using it and recommending it to others. Conversely, when technology is perceived as dissatisfying, users may discontinue its use or seek out alternative options (Almaiah et al., 2022). The perceived learning value, on the other hand, refers to the benefits that students perceive when using technology, such as access to information, time savings, and reduced effort. When students perceive high value in technology, they are more likely to continue using it over time. For educational institutions, perceived value is a crucial factor in establishing a competitive advantage through technology. By offering students a technology that provides clear benefits and advantages over other options, institutions can attract and retain students, enhancing their reputation and success. In summary, perceived value is an essential element for educational institutions seeking to implement an effective technological solution. By focusing on the benefits that students perceive they can gain from using the technology, institutions can create a strong competitive advantage that attracts and retains students over time (Khan et al., 2023; Biswas, 2023). Personal innovativeness is considered a mediating factor that correlates the relation between the perceived usefulness and the perceived learning value and the acceptance of learning platforms. Thus, personal innovativeness is related to the users' willingness to adopt and use new technologies due to their innovative features that are not available in other technologies. It is a key factor in technology acceptance which measures the degree to which users are likely to seek out and experiment with the new technologies.

Personal innovativeness and personal satisfaction can be closely related, as individuals with high levels of personal innovation may experience greater satisfaction when adopting and using new technologies. Innovativeness should meet the users' needs and expectations to fulfil the factor of satisfaction. Thus, personal innovativeness and personal satisfaction can be closely linked, with higher levels of personal innovativeness often associated with greater satisfaction in using new technologies. By designing technologies that meet the users' needs and expectations with high personal innovativeness, the acceptance of the

technology will be higher, and it may foster a sense of personal satisfaction and fulfilment among users McGee (2023). Similarly, perceived learning value is closely related to perceived innovativeness. The users who perceive the technology as having a high learning value will pay attention to all the available features including personal innovativeness Dowell & Kovanovic (2022). Based on the previous assumptions, the following hypotheses are proposed:

H_{1b}: *There is a more significant relation between perceived satisfaction and perceived learning value with ChatGPT acceptance than Google acceptance in the learning process.*
H_{2b}: *There is a more significant relation between the perceived value of ChatGPT acceptance than Google acceptance.*
H_{3b}: *There is a more significant relation between the perceived value of ChatGPT acceptance and Google acceptance, mediated by personal innovativeness*.
H_{4b}: *There is a more significant relation between perceived satisfactions of ChatGPT acceptance than Google acceptance, mediated by personal innovativeness.*
H_{5b}: *There is a more significant relation between perceived satisfactions of ChatGPT acceptance than Google acceptance*.
H_{6b}: *There is a more significant relation between personal innovativeness of ChatGPT acceptance than Google acceptance.*

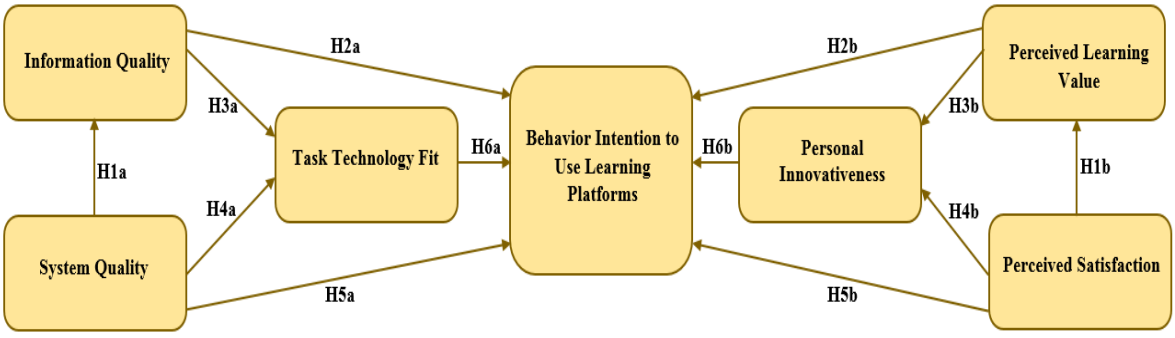

Fig. 1. Research Model

4. Research Methodology

4.1 Data collection

The students from collaborating universities in the UAE were provided with online questionnaires. Data collection took place between February 03, 2023, and May 15, 2023. The study committee distributed 200 questionnaires randomly, and a total of 76.5% of responses were obtained from these surveys. Participants responded to 153 questionnaires, while 47 questionnaires were excluded due to incomplete answers. The 153 fully accepted questionnaires align with the recommended sample size of 152 respondents out of a population of 250, as suggested by Halevi et al. (2017). The sample size of 153 is significantly different from the minimum requirements. Consequently, a review employing structural equation modeling was conducted using this sample size to support the hypotheses (Padayachee et al., 2010). The academic team utilized Structural Equation Modeling (SEM) with SmartPLS Version 3.2.7 to assess the measurement model. The Final Path Model was employed to carry out sophisticated interventions.

4.2 Students' personal information / Demographic Data

Fig. 2 presents an evaluation of demographic and personal information.

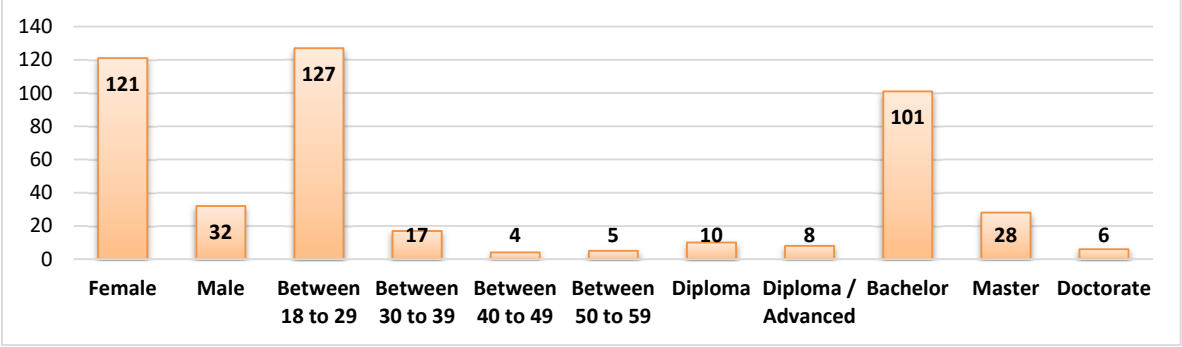

Fig. 2. Demographic data of the respondents (*n*=153)

It is observed that 79% of the participants were female, while 21% were male. In terms of age distribution, 83% of the students belonged to the age group of 18 to 29, while the remaining participants were 29 years or older. The respondents possess a variety of university degrees. To elaborate, the proportions of students holding a diploma, advanced diploma, bachelor's degree, master's degree, and doctoral degree were 7%, 5%, 66%, 18%, and 4%, respectively. When participants expressed their willingness to volunteer, the "purposive sampling approach" suggested by Padayachee et al. (2010) could be employed. This study included participants from diverse universities, spanning different age groups and educational backgrounds. Additionally, IBM SPSS Statistics version 23 was used to analyze the demographic data.

4.3 Study Instrument

In the present study, a questionnaire was employed to validate the hypothesis. Seven constructs were carefully selected as reliable measures, leading to the inclusion of 22 new items in the questionnaire. The foundation of these constructs is presented in Table 2, aiming to enhance the usability of the study constructs and provide supporting evidence from various existing research that strengthens the current framework. Finally, the academic team made necessary adjustments to the survey questions based on previous studies.

Table 2
Measurement Items

Constructs	Items	Definition	Instrument	Sources
Behavior Intention to Use Learning Platforms	BI1	Behavioral intention is meant to refer to the intention of the targeted users to utilize the technology deemed as new. It is part of Davis's TAM theory.	ChatGPT offers a good opportunity to try.	Al-Marzouqi et al., (2024) Davis (1989)
	BI2	Behavioral intention is meant to refer to the intention of the targeted users to utilize the technology deemed as new. It is part of Davis's TAM theory.	ChatGPT presents a valuable opportunity for experimentation.	Davis (1993)
System Quality	SQ1	The system quality is closely related with the measure of technology which shed lights on certain characteristics such as functionality, reliability, usability, efficiency, maintainability, and portability.	The degree of ChatGPT functionality is higher than Google in doing my learning task.	Surameery & Shakor(2023)
	SQ2		The degree of ChatGPT usability in achieving the learning task in limited time is lower than Google.	Dishaw & Strong (1999)
	SQ3		The degree of ChatGPT efficiency is lower than Google.	
	SQ4		The degree of ChatGPT reliability is higher than Google which encourages me to adopt it.	
Information Quality	IQ1	The information quality is closely related with the measure of technology which shed lights on certain characteristics such as accuracy, timelines, relevance competence and relevance .It is basically refers to the quality of data provided by information systems	ChatGPT provides me with more specific information as compared to Google.	Alfaisal et al., (2024)
	IQ2		ChatGPT does not provide more comprehensive information as compared to Google.	Salloum & Shaalan (2018)
	IQ3		ChatGPT provides me with helpful information for my daily task, as compared to Google.	
	IQ4		ChatGPT does not provide the required information as compared to Google.	
Task Technology Fit	TTF1	The system of TTF helps to improve students' performances when the used technology is good enough to support the required task. Therefore, the system of TTF is used to refer to the degree to which the capabilities of the technology match the proposed task. TTF is remarkable because it focuses on the type of function available to students that can fil their own learning tasks.	The information obtained from ChatGPT is more updated as compared to Google.	Choudhury & Shamszare (2023)
	TTF2		The information obtained from ChatGPT is more appropriate and detailed as compared to Google.	
	TTF3		The information obtained from ChatGPT is much more than what I need to carry out my learning tasks, as compared to Google.	
The Perceived Satisfaction	PS1	The perceived satisfaction is an influential factor that measure the degree of adoption toward technology The higher degree of satisfaction is, the higher the possibility of using the technology in the future repeatedly. Thus, satisfaction may lead to the rare use of the technology because it does not meet students' expectations and needs.	ChatGPT has more satisfactory tools that facilitate the process of learning than Google.	Choudhury & Shamszare (2023)
	PS2		ChatGPT has innovative features that affect my level of satisfaction than Google.	
	PS3		ChatGPT does not satisfy my learning needs to adopt it than Google.	
The Perceived Learning Value	PLV1	The perceived value is concerned with the ability that students can get in terms of information, time and effort which urges them to continuously use the technology It is a fundamental factor for educational institutions to implement effective source of competitive advantage.	ChatGPT offers more significant benefits than Google in my learning process.	Alfaisal et al., (2024)
	PLV2		ChatGPT has a special type of value in different learning task than Google.	
	PLV3		ChatGPT does not have a unique value which encourages me to adopt the technology as compared to Google.	
Personal Innovativeness	PI1	Personal innovativeness is an influential factor that affect the level of adoption in educational environment. Students' innovativeness indicates his or her willingness to experiment with a new technology which may increases the chances of using the technology in different learning tasks.	ChatGPT has an up to date technology that satisfies my needs than Google.	Alfaisal et al., (2024)
	PI2		ChatGPT has more innovative features that increase the value of the technology as compared with Google.	
	PI3		ChatGPT provides me with a higher level of unique experience that encourages me to adopt it as compared with Google.	

4.4 Pilot study of the questionnaire

To assess the reliability of the survey questions in this study, a pilot study was conducted. The pilot study involved selecting data randomly, and initially, 20 students were chosen from the specified demographic. The overall sample size for this study consisted of 200 students, with 10% of the total sample allocated for evaluation purposes. By utilizing IBM SPSS Statistics version 23, the internal reliability of the measurement items was assessed using Cronbach's alpha. This evaluation allowed for a more comprehensive assessment of the pilot study's findings and facilitated the generation of reliable results for the measurement items. In social sciences, a reliability coefficient of 0.70 is considered adequate. Cronbach's alpha scores for the five measurement scales are presented in Table 3.

Table 3
Cronbach's Alpha values for the pilot study (Cronbach's Alpha ≥ 0.70).

Construct	Cronbach's Alpha
BI	0.740
IQ	0.758
PI	0.739
PLV	0.882
PS	0.883
SQ	0.787
TTF	0.823

4.5 **Survey Structure**

The questionnaire survey consisted of the following parts which were handed to a sample of students.

- The participants' personal information, which is very connected to the first part.
- There are two items referred to as Behavior Intention to Use Learning Platforms in Part II.
- The third part contains twenty items in the following categories: System Quality, Information Quality, Task Technology Fit, Perceived Satisfaction, The Perceived Learning Value, and Personal Innovativeness.

A five-point Likert scale with the five potential answers of Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5) was selected to accurately gauge the 22 items.

5. Findings and Discussion

5.1 Data Analysis

The current study employed partial least squares-structural equation modeling (PLS-SEM) using SmartPLS V 3.2.7 Bray & Parkin (2009) for data analysis. The data collection process followed a two-step assessment approach, which included the measurement model and structural model (Bray & Parkin, 2009). PLS-SEM was specifically chosen for this study due to several factors highlighted throughout the research paper. Firstly, emphasis was placed on analyzing the proposed conceptual theory using PLS-SEM (Bray & Parkin, 2009). Secondly, the PLS-SEM was utilized to effectively handle the exploratory research data that was collected based on the conceptual models (Bray & Parkin, 2009). Thirdly, the PLS-SEM analysis was performed on the entire model as a unified entity, rather than dividing it into separate parts. Finally, concurrent analysis was conducted for both the structural and measurement models using PLS-SEM. The significance of PLS-SEM lies in its ability to generate and obtain accurate measurements (Bray & Parkin, 2009).

5.2 Convergent validity

The evaluation of the Measurement Model was conducted based on the concepts of construct validity, which include both discriminant and convergent validity, as well as construct reliability, which comprises Cronbach's alpha (CA) and composite reliability (CR). As depicted in Table 4, Cronbach's alpha (CA), indicating construct reliability, ranged from 0.798 to 0.885. These values fall below the cutoff value of 0.7 (Pai & Huang, 2011). However, the findings in Table 4 demonstrate that the composite reliability (CR) scores range from 0.823 to 0.891, surpassing the cutoff point. To assess convergent validity, it is crucial to test the mean-variance extracted (AVE) and factor loadings (Pai & Huang, 2011). Except for those already mentioned, Table 4 shows that all factor loading values exceeded the criterion value of 0.7. Furthermore, Table 4 presents the AVE values, which are above the threshold of 0.5, disregarding the earlier values ranging from 0.513 to 0.757. Consequently, convergent validity is likely to be achieved based on the considerations.

5.3 Discriminant validity

To assess the discriminant validity, the decision was made to reevaluate the two requirements using the Heterotrait-Monotrait ratio (HTMT) and the Fornell-Larker criterion in this study Pai & Huang (2011). The results presented in Table 5 clearly indicate that the Fornell-Larker criterion validates the criteria, as every Average Variance Extracted (AVE) and its square root

exhibit stronger associations with their respective constructs (Pai & Huang, 2011). Table 6 displays the results of the HTMT ratio, where each construct falls below the threshold of '0.85' (Pai & Huang, 2011). This indicates that the HTMT ratio meets the desired criterion, allowing for the computation of discriminant validity. The findings of this study demonstrate that there were no issues regarding the validity and reliability evaluation of the Measurement Model. Consequently, the gathered data can be effectively utilized for assessing the structural model.

Table 4
Convergent validity results which assure acceptable values (Factor loading, Cronbach's Alpha, composite reliability ≥ 0.70 & AVE > 0.5)

Constructs	Items	Factor Loading	Cronbach's Alpha	CR	AVE
Behavior Intention to Use Learning Platforms	BI1	0.887	0.880	0.862	0.757
	BI2	0.803			
Information Quality	IQ1	0.854	0.847	0.840	0.588
	IQ2	0.783			
	IQ3	0.838			
	IQ4	0.873			
Personal Innovativeness	PI1	0.780	0.857	0.860	0.671
	PI2	0.924			
	PI3	0.805			
Perceived Learning Value	PLV1	0.883	0.811	0.823	0.513
	PLV2	0.773			
	PLV3	0.837			
Perceived Satisfaction	PS1	0.807	0.885	0.828	0.520
	PS2	0.809			
	PS3	0.882			
System Quality	SQ1	0.777	0.798	0.861	0.636
	SQ2	0.939			
	SQ3	0.853			
	SQ4	0.861			
Task Technology Fit	TTF1	0.765	0.828	0.891	0.732
	TTF2	0.824			
	TTF3	0.836			

Table 5
Fornell-Larcker Scale

	BI	IQ	PI	PLV	PS	SQ	TTF
BI	**0.870**						
IQ	0.531	**0.823**					
PI	0.660	0.574	**0.819**				
PLV	0.579	0.635	0.619	**0.816**			
PS	0.552	0.599	0.609	0.627	**0.721**		
SQ	0.415	0.532	0.504	0.357	0.413	**0.860**	
TTF	0.413	0.631	0.508	0.547	0.620	0.608	**0.856**

Table 6
Heterotrait-Monotrait Ratio (HTMT)

	BI	IQ	PI	PLV	PS	SQ	TTF
BI							
IQ	0.699						
PI	0.316	0.739					
PLV	0.116	0.159	0.121				
PS	0.793	0.178	0.726	0.588			
SQ	0.516	0.597	0.618	0.421	0.696		
TTF	0.549	0.753	0.653	0.198	0.524	0.612	

5.4 Hypotheses testing using PLS-SEM

The structural equation model in this study was developed using Smart PLS, which utilizes maximum likelihood estimation to explore the interdependencies among various theoretical constructs of the structural model (Pai & Huang, 2011). Following this approach, the proposed hypotheses were analyzed, and the results are presented in Table 7 and Fig. 3, indicating a moderate predictive power of the model Pai & Huang (2011). Specifically, the "Technology Acceptance Rate" variable accounts for approximately 65.7% of the variance. Table 8 provides details of the beta (β) values, t-values, and p-values for all the developed hypotheses based on the findings obtained through the PLS-SEM technique. The empirical data analysis supported hypotheses H1a, H2a, H3a, H4a, H1b, H3b, H4b, H5b, and H6b. However, hypotheses H5a, H6a, and H2b did not receive support and were subsequently rejected.

The first hypothesis examines the correlation between System Quality (SQ) and Information Quality (IQ) (β = 0.532, P < 0.001). The outcome of this hypothesis demonstrates a significant positive influence of SQ on IQ. Hence, H1a is supported. The findings indicate that Task Technology Fit (TTF) is significantly influenced by both Information Quality (IQ) (β = 0.494, P < 0.001) and System Quality (SQ) (β = 0.445, P < 0.001). As a result, hypotheses H3a and H4a receive support, affirming that IQ and SQ have significant impacts on TTF.

The results of the study revealed significant relationships between Behavior Intention to Use Learning Platforms (BI) and various factors. Specifically, BI had a significant positive impact on Information Quality (IQ) (β = 0.559, P < 0.05), Perceived Satisfaction (PS) (β = 0.019, P < 0.001), and Personal Innovativeness (PI) (β = 0.913, P < 0.001), thereby supporting hypotheses H2a, H5b, and H6b, respectively. On the other hand, the study found that System Quality (SQ) (β = 0.796, P = 0.274), Task Technology Fit (TTF) (β = 0.097, P = 0.90), and The Perceived Learning Value (PLV) (β = 0.125, P = 0.988) did not have a significant impact on BI. Hence, hypotheses H5a, H6a, H2b, and H5b were not supported in this study.

The results of the study also indicate that Perceived Satisfaction (PS) is significantly influenced by both The Perceived Learning Value (PLV) (β = 0.727, P < 0.001) and Personal Innovativeness (PI) (β = 0.337, P < 0.05). Therefore, hypotheses H1b and H4b are supported, indicating that PLV and PI have significant effects on PS. Furthermore, the relationship between The Perceived Learning Value (PLV) and Personal Innovativeness (PI) (β = 0.374, P < 0.05) was examined. The findings of this hypothesis demonstrate a significant positive influence of PLV on PI. Hence, H3b is supported, indicating that PLV has a significant impact on PI.

Table 7
R^2 of the endogenous latent variables

Construct	R^2	Results
BI	0.657	Moderate
IQ	0.686	Moderate
PI	0.460	Moderate
PLV	0.449	Moderate
TTF	0.469	Moderate

Table 8
Hypotheses-testing of the research model (significant at p** < = 0.01, p* < 0.05)

H	Relationship	Path	*t*-value	*p*-value	Direction	Decision
H1a	SQ → IQ	0.532	7.270	0.000	Positive	Supported**
H2a	IQ → BI	0.559	5.053	0.043	Positive	Supported*
H3a	IQ → TTF	0.494	6.557	0.000	Positive	Supported**
H4a	SQ → TTF	0.445	5.600	0.000	Positive	Supported**
H5a	SQ → BI	0.796	1.095	0.274	Positive	Not supported
H6a	TTF → BI	0.097	1.701	0.090	Positive	Not supported
H1b	PS → PLV	0.727	11.284	0.000	Positive	Supported**
H2b	PLV → BI	0.125	0.016	0.988	Positive	Not supported
H3b	PLV → PI	0.374	2.463	0.014	Positive	Supported**
H4b	PS → PI	0.337	2.138	0.033	Positive	Supported*
H5b	PS → BI	0.019	0.294	0.000	Positive	Supported**
H6b	PI → BI	0.913	22.145	0.000	Positive	Supported**

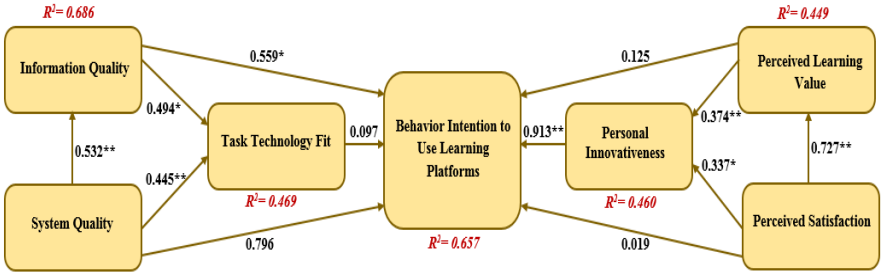

Fig. 3. Path coefficient of the model (significant at p** < = 0.01, p* < 0.05)

6. Discussion

The discussion of the current study has two phases. The first phase focuses on the discussions of results that are related to the dependent variables of the conceptual model. The second phase focuses on the discussions of the moderators in the current study.

6.1 Discussion of the hypothesis results

The development of recent artificial intelligence tools has attracted researchers' attention, encouraging students all over the world to use them. This leads to a rapid transition from the traditional use of previous platforms to the more developed type of platform that is part of the innovative features of AI. Many previous studies have looked at the elements that influence students' adoption of ChatGPT for a better learning environment (Castillo et al., 2023). Based on the objectives of the research, the relationship of the variables (quality system, quality information, perceived value and perceived satisfaction) is investigated. It also explored the significant effect of these factors concerning two moderators which positively impact the learning environment's effectiveness. Thus, the current study attempts to examine the proposed hypotheses where moderators play important roles in the conceptual model.

The discussion of results has shown that some of the proposed hypotheses have been approved whereas others have not been supported. The fact that system quality and information quality have provided highly significant types of information is evident. The system quality and information quality affect positively the acceptance of ChatGPT which is in line with previous studies. The system quality and information quality have been distinguished as effect variables in ChatGPT in comparison with Google platforms. The system quality affects the acceptance indirectly through the ease of use and the perceived usefulness. Some studies, on the other hand, have proved that system quality and other factors are significant predictors of learners' intention to use various education tools (Castillo et al., 2023).

The effect of the perceived value on the adoption of ChatGPT has been positively evaluated in the current study. The users of ChatGPT can perceive ChatGPT as a useful tool due to the effective and comprehensive results that were obtained. The results agree with previous studies which highlighted that perceived value has a mediation effect on the use of other technology such as IoT (Castillo et al., 2023). Similarly, the perceived satisfaction has been supported by the results which stand in agreement with previous studies. The fact that perceived satisfaction can affect the users' perspective, particularly at the educational level, is widely agreed upon by researchers (Giordano et al., 2024).

The moderator impact of ChatGPT users is influential as it represents the actual connections between the proposed dependent variables, namely, the system quality, information quality, perceived satisfaction and the perceived satisfaction. According to the previous studies that focus on the moderating effect, there is often a significant interaction effect of the perceived satisfaction and other variables on the use of technology. It has been revealed that there is an indirect effect of the moderators such as the task fit technology on the adoption of technology. In fact, the task technology fit that is integrated into the model as a moderator explains much more of the variance in the dependent variable. The use of moderators explained how the application is measured to indicate how the application is up to date and appropriate in accordance with the recent usage of students. That is, adding the task technology fit as a moderator enhances the use of ChatGPT. Previous studies have agreed with the current results showing the increasing impact of technology fit on the use of technology. A study by Giordano et al. (2024) has shown that technology fit may positively affect the acceptance of technology particularly if the technology is supported by the government. The task technology fit has greater effects on students rather than non-students because it focuses on the positive effects on behavioral variables less frequently than perceptual variables. This implies that the task technology fit can directly measure the perceptions rather than behaviors and be contextualized to specific types of technologies and users. A similar study by Khan et al. (2023) has concluded that the task-technology fit analysis can contribute to a better understanding of blockchain adoption in the public sector because it offers the substance to an extended task-technology fit theory for federally structured, cross-organizational contexts.

Similarly, personal innovativeness has been approved as a significant moderator that validates the relation between the system quality and system information and the intention to use the technology. The relation is positively evaluated for the users, and it shows a high level of strength on the effect of innovativeness as a moderator to enhance the use of ChatGPT. Thus, the findings confirmed the proposed hypotheses and were in line with previous results. Previous studies have shown that personal innovativeness can function as a moderator to measure the effectiveness of technology acceptance (Khan et al., 2023). Another study has revealed that innovativeness has an indirect effect on the adoption of technology, and it may strengthen the future use of the technology Khan et al. (2023).

6.2 Practical Implications

The theoretical implications are directed to universities and administrations of applications that offer similar services must focus on the usefulness of the applications and consequently influence the success of the educational process and it is a breakthrough towards the educational contributions in different sectors (Qadir, 2022). To ensure the success of ChatGPT in educational institutions, the effectiveness of the applications may help in framing the constructs we have adopted in the conceptual framework. The provided conceptual model has enriched the literature for the adoption of ChatGPT by focusing on the moderators which are the task fit technology and the innovativeness (Qadir, 2022). The study contributed theoretically and stressed the value of users' views in understanding the benefits of how ChatGPT is making a meaningful contribution to enhancing the users' behavior and social perceptions at the educational level (Dowell & Kovanovic, 2022). To enrich the quality system, perceived value and perceived satisfaction, the theoretical aspect of this study we have proposed these

constructs to comprehensively evaluate the effectiveness of this model. Another theoretical strength of the current conceptual model is to link between the effectiveness of the perceived value and the perceived satisfaction and the personal innovativeness as a moderator on one hand, and the quality system and the quality information with the moderator task technology fit on the other hand.

The results also provide impressive support for the development of the conceptual model at the government level from a practical perspective. The current study findings strengthen the significance of ChatGPT at educational public universities which can be applicable to other governmental applications. Finally, the ChatGPT conceptual model serves as a parameter for a qualitative research approach to have a more precise vision towards the significance of the applications in other fields within the public sector.

6.3 Managerial Implications

The current study provides insights into the effective adoption of the use of ChatGPT at educational institutions to facilitate the teaching process and studying demands. The administration of educational institutions in the Gulf area can make use of the current results to make significant efforts to use the applications from different perspectives. They can be summarized as follows. First, ChatGPT applications should meet the student's needs and enrich the relative advantage of the educational process by integrating ChatGPT in the taught course as a means of source-provider. It provides various information in different forms to facilitate the process of teaching and learning. Second, governments in the future can make use of ChatGPT to create collaborative and regulatory policies to use the application as an available source of information to all government institutions and they should accelerate the adoption of ChatGPT by including other similar applications and other open–access features. Therefore, this research study will assist the users to understand the factors which support the use of similar applications. Third, the study will act as a thought-provoking factor for the ChatGPT policymakers to develop appropriate policies that can save the rights of the users and ensure the users' perceived value towards intention to use ChatGPT.

6.4 Limitations of the Study and Future Studies

Study is limited to different perspectives. The data is collected from a sample of studies within the Gulf area. The users in the gulf are mainly students that joined different universities and they need the applications for various educational purposes. Future studies may focus on other samples from other government institutions that may use this application to enhance future usage. The conceptual framework is limited in scope to certain aspects that are related to system quality, satisfaction, value and innovativeness with moderators that can measure the effects of ChatGPT. Future studies can include other variables with different moderators that may measure the other essential factors.

7. Conclusion

The study concludes that ChatGPT interests and benefits are higher than other applications. It is not simply a technical device, but it is an integrated platform that summarizes many issues to focus on different subject content, practical theories, and technological issues. It has been recognized as an effective tool in comparison with Google platforms. Undoubtedly ChatGPT is an effective learning tool that is well-designed with a high level of sufficiency. Therefore, studying the impact of ChatGPT becomes crucial. Thus, this study reveals that this application has a large impact on the users' acceptance of information and system quality on one hand and the perceived learning value and perceived satisfaction on the other hand. However, some of the aspects have not been supported and they do not necessarily have a significant predictive effect on the use of ChatGPT. This finding implies that providing additional development is required to achieve better results which will increase the level of contributions of the application itself.

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