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Antecedents of the adoption, use, and legal risks of ChatGPT in Jordan

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A B S T R A C T

The current study aims to assess the factors that could affect students' use of ChatGPT. The study proposed a theoretical model that included six factors. Data was collected from 518 students using a questionnaire. The data were analyzed using Structural Equation Modeling to identify the relationships and test the hypothesis. The findings revealed that performance expectancy and social trust significantly influenced students' intentions to use ChatGPT. Contrary to expectations, both social influence and effort expectancy had insignificant effects. By elucidating the core factors affecting the utilization of ChatGPT, trust had a significant impact on the intention to use ChatGPT. Furthermore, trust mediates the relationship between perceived security and intention to use ChatGPT, this study can provide valuable insights for policymakers. Moreover, this study contributes to the existing literature by setting the foundation for future research seeking a deeper understanding of the factors influencing the use of other AI technologies in teaching and learning in Electronic Public Facilities.

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1. Introduction

The societies today are increasingly digitized and much of this phenomenon can be attributed to the use of Artificial intelligence (AI). Through the use of AI, duties or tasks become automated, while data can be processed in big amounts, and this has revolutionized various aspects of the life of people today (Yang, 2022). AI is a technology with the capability of emulating the responses of humans and these responses can be construed as signs of intentionality and judgment (Shubhendu & Vijay, 2013). These days, AI constitutes a much deeper meaning owing to the current technological advancements today as can be exemplified by the emergence of neural networks and machine learning (Ho, Le, & Nguyen, 2024; Wang, 2019). Some experts have raised concerns that the systems used by such apps could be misused for plagiarism, fraud and the spread of misinformation (Almajali et al., 2023). Artificial Intelligence (AI) advocates, however, describe the app as a technological breakthrough (Elali, & Rachid, 2023). Scholars are increasingly demonstrating their interests on the potential impact of AI on the life aspects of humans. The implementation of AI for instance could lead to job loss and this has become a concern (Pavlik, 2023). Within the context of education, AI usage is still new, and its potential for learning and teaching is yet to be grasped among educators (Altarawneh & Al-Ghammaz, 2023; Celik, 2023). There have been proposals and recommendations towards AI usage in education but some educators have been reluctant to use software which gathers data of students, while some have been demonstrating skepticism towards Information Technology

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(IT) companies that try to prove the ability of technology in becoming the solutions to all educational issues (Stockman & Nottingham, 2022). Still, at present, the world is finding ChatGPT a promising new technology.

However, in Europe, earlier this year, the popular and controversial ChatGPT faced a major legal hurdle in Italy, where it was banned. The Italian Data Protection Authority (GPDP) accused the company that developed it of violating EU data protection rules, prompting the company to restrict access to the service in Italy while it tried to fix the issue before the program was back online on April 28, after OpenAI addressed the authority's concerns but without making major changes to the service. The agency said it welcomed the changes introduced by ChatGPT, although the company's legal troubles may have only just begun. Regulators in several countries are investigating how AI tools collect data, citing a trove of unlicensed training data and the chatbots' tendency to spread misinformation (Fassi & Sabti, 2024).

A product of OpenAI, ChatGPT which was introduced in 2022, is essentially a chatbot that employs AI power. Being endowed by a vast amount of body language, this chatbot has the ability to produce texts in responding to the prompts made by users. Those with an OpenAI account can use ChatGPT for free. With the ability to generate texts akin to human language, ChatGPT employs machine learning and algorithms in processing texts of massive contents like websites, news articles, Wikipedia, as well as books (Cooper, 2023). It is also able to learn language structure and patterns through analyses and processing of data terabytes. As a result, users are able to obtain meaningful and relevant content according to their requests.

For higher learning institutions, however, the increasing popularity of ChatGPT usage has become a concern. In this regard, there are those who perceive the need for higher learning institutions to reevaluate the role of assessment in learning enhancement, rather than employing applications in their assessment. However, there are those who perceive the value of ChatGPT in improving the writing and critical thinking of students, making this technology useful in learning, teaching and assessment innovation. In this regard, human relationships could be transformed into knowledge.

The legal aspect of the electronic management of public facilities indicates that most countries have introduced legislation for the electronic management of public facilities to adapt the development taking place in modern electronic means to create a radical change in all government procedures in general and in courts in particular. Most countries have been able to transform traditional courts into electronic courts or "E-Court" by introducing advanced digital means such as disseminating information and judicial decisions to everyone, as every desired administrative reform should aim to develop work methods and simplify its procedures (Al-Onsouri, 2016; Althunibat et al., 2024). The administration strives to keep pace with the times and harmonize its activities with the scientific and technological innovations agreed upon by the human mind. The e-government system includes that the public administration electronically carries out its function of administrative activity, wholly or partially.

At the Hashemite Kingdom of Jordan level, the Jordanian legislator has emphasized the electronic developments adopted by successive governments, especially in exercising their administrative actions towards individuals and the management of public facilities. As the Hashemite Kingdom of Jordan is an integral part of the global system, the Kingdom has kept pace with development by updating legislation related to the work of administration in a way consistent with the spirit of the times. The so-called e-government has emerged, which relies on its work on the World Wide Web (WWW) and electronic communications across all layers and levels of government to provide all services (Al-Damen, 2023).

It is worth mentioning that this measure comes in line with many countries that have adopted the electronic public facilities project to improve the services provided to the public, which will have a direct impact on the principle of equality, as this project will work to improve the efficiency of public employees in performing their duties (Geagea & Senussi, 2022). Accordingly, explaining the nature of the electronic public facility (EPF) necessitates giving an insight into the concept of electronic public facility, the significance and impact of using electronic management on the electronic public facility, distinctive elements of electronic public facility, requirements for applying electronic public management in public facilities, Advantages of electronic public management, and disadvantages of electronic public management.

1.1. Concept of electronic public facility

The electronic public facility refers to the facility that provides its services through electronic government websites and portals accessed at any time and from anywhere across the national territory, and sometimes outside it, as its advantages include saving time and effort and reducing cost while increasing effectiveness (Geagea & Senussi, 2022; Baum, 2008). Others have defined the electronic public facility as using the product of technical ability to improve the levels of performance of government agencies, raise their efficiency, and enhance their effectiveness in achieving their desired goals. It is also known as a project undertaken by the administration to satisfy the general needs of individuals to achieve public benefit only (Fayyad & Fayyad, 2023).

Through a ruling of the Supreme Administrative Court, the Jordanian administrative judiciary defines a public facility as a collective need of such high importance that it requires government intervention to provide it to individuals using the means of public law, whether the individuals can satisfy that need by their means or not. In other words, the basic element in a public facility is the necessity of having a public service that the legislator aims to manage directly from the government by a certain entity under its supervision. It makes no difference whether this service is related to or during commercial or industrial activities, as it is understood from the decision that it is possible to provide the service in any form, including electronically.

Besides, it should be noted that the public facility performs its activities and tasks based on electronic means and aims to serve the public interest, noting that this aligns with all standards and accommodates the use of electronic means in the public facility (Cheng & Liu, 2010; Onisi, 2021). Regarding the concept of electronic management of public facilities, it should be noted that there is no comprehensive and holistic definition of electronic management. It can be said that electronic management means implementing all work and transactions that take place between two or more parties, whether individuals or organizations, through the use of electronic communications networks (Hassan & Al-Adayla, 2021).

It is necessary to know the factors that can affect the intent of students to utilize ChatGPT as this could help improve the adoption and use of this technology among students (Tiwari et al., 2024). A theoretical model was proposed in this study, to evaluate such factors. This will also bridge the gap in the literature.

2. Literature Review

2.1. ChatGPT

The role played by ChatGPT in making the domain of education better and in supporting the learning activities of students is discussed in this section. In the education domain, ChatGPT can offer some supported services, to facilitate students in completing their assignments and tests (among others), while also allowing students to generate creative content (Firaina & Sulisworo, 2023). ChatGPT also reduces repetitive work to instructors, particularly in their lesson planning grading and in their delivery of assignments. Also, using ChatGPT, students could become more productive and motivated, and more skilled in their language usage, motivating them to continue the use of this technology (Firaina & Sulisworo, 2023). For instructors, the use of ChatGPT allows them to combine various teaching methods, considering that this technology helps in project-based learning and improves the interaction, satisfaction, and the readiness of students towards ChatGPT usage.

Usage of various technologies can be examined using UTAUT. Among these technologies that had been examined using UTAUT included mobility, blended learning, e-learning platforms and learning management systems. In this regard, factors with the potential impact on the use of a technology among students need to be understood, so that students could be attracted to use it (Adzharuddin & Ling, 2013). Within the Arab context, UTAUT has yet to be employed in studying the intent of students towards ChatGPT usage, denoting a gap in the literature. In order to close this gap, the recent study employed UTAUT in proposing a theoretical model, to look into the factors with potential impact on ChatGPT usage among students.

2.2. The significance and impact of using electronic management on the electronic public facility

It is documented that the state seeks to appear in the best ranks of quality and distinction by providing the best to its citizens through its public facilities, as the state works diligently to manage the facilities regularly and steadily so that its public facilities do not cause any disruption in the social, economic and administrative organization in the state (Hillman et al.,2009;Musika, 2021). Amid the transformation of the role of states in terms of the administrative law system itself, the concept of public facility has developed in terms of defining the limits of the jurisdiction of the administrative judiciary and applying distinct principles and provisions that are unparalleled in the domain of private law relations (Omar, 2021). It is worth noting that its foundations can be limited to two standards: the public authority standard and the public facility standard.

2.3. Distinctive elements of electronic public facility

There are three key distinctive elements of electronic public facilities:

2.3.1. Objective element

The purpose of establishing a public facility is to target a public interest and provide a public service or satisfy a need for individuals. The best example of this is the electronic services that were provided during the COVID-19 pandemic in 2020 to mitigate the effects of confronting this pandemic on the services provided to citizens by public facilities, the measures taken by public authorities, and their contribution to the effectiveness of the public health maintenance facility (Al-Qubailat, 2023).

2.3.2. Management element

The facility must be established by the administration and managed directly by it or by persons of private law but under its supervision and control.

2.3.3. The facility's relation to a private legal system

The project is a public facility when it is subject to its legal system. That is, the project must be subject to the provisions and principles of administrative law, and its management must follow the means of public law that depend on the rights and privileges enjoyed by the administration as a public authority (Chung, 2015; Fayyad & Fayyad, 2023).

2.4. Requirements for applying electronic public management in public facilities

The following shall be the five requirements for applying electronic public management in public facilities:

2.4.1. Human resources requirements

The human element is one of the most significant elements in organizations, as the implementation of electronic public administration requires the successful qualification and training of human cadres to work in this field, as the preparation of specialized technical human cadres related to the information structure and work systems is a necessity for electronic communications networks. Several human resources requirements must be met in applying electronic management as follows:

- Identifying current and future needs for qualified individuals in information systems and software.
- Working on the Internet.
- Attracting the best-qualified individuals in the fields of information systems and software.
- Creating effective systems to retain, develop, and motivate individuals.
- Achieving the administrative empowerment of individuals to provide them with the opportunity to quickly deal with changes in the technological environment.

2.4.2. Technical requirements

Implementation of an electronic public administration system requires scientific, advanced, and expensive equipment (Elmanaseer, 2023).

3. Theoretical Framework

UTAUT has been chosen in this study in the formation of the theoretical model, owing to its popularity and reliability in understanding technology adoption in countless domains including that of education (Alshammari, 2021). There are four key constructs in UTAUT namely: performance expectancy (PE) which entails the belief of user that the use of technology will benefit them, effort expectancy (EE) which is the ease with which user can use the technology, social influence (SI) which concerns important people to user who feel that user should or should not use the technology, and facilitating conditions (FC) which is essentially the belief of user about the available infrastructure and technical help in their use of the technology. All these constructs are proposed to have an impact on behavior intention (BI).

Despite the use of UTAUT in the study of countless domains (e.g., mobile phones, blended learning, and virtual classrooms), it has yet to be applied in examining ChatGPT and its role in education, within the Arab setting particularly. For this reason, UTAUT has been chosen in this study, in the development of a model for examining the factors with the potential impact on the intent of students towards ChatGPT usage.

3.1. Research hypotheses and research model

Performance expectancy of PE relates to the degree of expectation of the user that the utilization of a given technology would make them perform better, or would make their task completion easier. Within the academic setting, performance expectancy will determine whether a given technology will be adopted or rejected (Alshammari, 2021). PE has been shown to significantly affect the intention of users towards adopting different types of technologies. Among the technologies examined using this construct includes classroom technology, mobile learning, in addition to learning management systems. The hypothesis below was hence proposed:

H_1: *PE has a positive effect on the intent of students towards ChatGPT usage*.

Effort expectancy or EE concerns the amount of work that users expect to engage in, in the use of a given technology. The impact of EE on the intent of users towards technology usage has been evidenced in studies on several technologies, for example, in mobile learning and in Google Classroom (Jakkaew & Hemrungrote, 2017). The hypothesis below was hence proposed:

H_2: *EE has a positive effect on the intent of students towards ChatGPT usage.*

Social influence or SI concerns the view of user's important others about whether they (user) should utilize a given technology. The effectiveness of the factor of SI in influencing the intent of users towards the use of various technologies has been reported, such as in the technologies of mobility and e-learning applications and LMS (Samsudeen & Mohamed, 2019). The following hypothesis was hence proposed:

H_3: *SI has a positive effect on the intent of students towards ChatGPT usage.*

During a pandemic, perceived security was found to significantly mitigate the transactional uncertainties. Similarly, Arnott & Meins (2007) found in their study that perceived security not only fosters trust, but it also has a positive impact on the behavioral intentions of customers. Additionally, in examining supplier trust, Wimmer and Bredow (2002) found that it was greatly affected by perceived security. Furthermore, noting the influence of people on their peers, Jeon et al. (2018) indicated that social influence can be generated when a significant number of people are utilizing a new system with certain behavioral objectives. As such, the following hypothesis was proposed:

H_4: *Perceived security has a positive effect on trust.*

Trust is an increasingly explored construct in various domains and manners (Daellenbach & Davenport, 2004; Maqableh & Alia, 2021). Within the domain of economics, James (2002) described this construct (trust) as an expectation when agents take risks within a setting that is neither complete nor certain. In relationships, Giaretta (2014) classed trust as a vital element, and in technology transfer, this factor is considered a vital element as well. In examining e-government services, Alkraiji and Ameen (2022) found that trust leads to increased loyalty. Heerink et al. (2010), in their study involving robot technology, indicated the importance of trust in human-robot interactions. In another study by Warkentin et al. (2018) involving e-government services adoption among citizens, trust had a significant impact on behavioral control and adoption of citizens on these services. Furthermore, the ability of trust in decreasing uncertainties and risks was reported by Khan et al. (2021). The authors also reported the positive effect of trust on the citizens' system usage behavior. The significance of trust as an impacting construct has led to the inclusion of this construct into Technology Acceptance Model (TAM), demonstrating also a significant linkage between trust and acceptance towards technology. The following hypothesis was therefore proposed:

H_5: *Trust positively influences the intent towards ChatGPT usage.*

Many researchers who employed TAM in their study, had included the construct of trust into TAM, expanding the model (Venkatesh et al., 2016). In other words, trust has been often included into TAM to expand the model. In a related study by Kamarudin et al. (2023), system trust was examined as a potential mediator between behavioral intention and actual use, and results showed partial mediation of systemic confidence in the relationship between behavioral intention and actual use. The mediating effect of perceived trust was also examined by Ooi et al. (2021) in their study on the link between perceived security and Bitcoin usage. This study therefore proposed the mediation of trust as below:
H6: Trust mediates the relationship between perceived security and the intent towards ChatGPT usage.

4. Methodology

4.1. Sampling and data collection

The replies were gathered using a non-probability purposive sampling technique. The study's intended audience consisted of ChatGPT-in law faculty members. The intended respondents were Jordanian university students, attending both public and private institutions. The majority of academics thought that a sample size of 200–500 respondents would be sufficient, based on the data provided by most management and social science research (Siddiqui, 2013). After the study was finished, 550 completed questionnaires were gathered. Due to incomplete questionnaire responses from the corresponding respondents, thirty-two of the surveys were not included in the final analysis. Every survey form that was filled out was checked for any missing data. The items were evaluated using a seven-point Likert scale, with 1 signifying strong disagreement and 7 denoting strong agreement.

4.2. Measures

Questionnaire contained items covering the study constructs that are included in the study model. Here, intention to use ChatGPT was represented by four items utilized in Shen et al. (2022); Performance expectancy was represented by four items utilized in Davis et al. (1989); effort expectancy was represented by four items utilized in Davis et al. (1989); Social influence was represented by four items utilized in Kim et al. (2010); Perceived security was represented by four items utilized in Jeon et al. (2018); Trust was represented by four items utilized in Heerink et al. (2010).

5. Data Analysis

5.1. Testing the model

5.1.1. Confirmatory factor analysis

This study employed Confirmatory factor analysis (CFA) in validating the factor structure of the set of observed variables or the factor loadings. This study also evaluated the convergence validity, and composite reliability (CR). All findings on the convergence validity, and composite reliability can be referred to in the following Table 1, while those on the discriminant validity can be referred to in Table 2.

Table 1
Confirmatory factor analysis results (Factor loading)

Latent Variable	Indicator	FL	FLS	AVE (> 0.50)	CR (> 0.70)	Cronbach's Alpha
Performance Expectancy (PE)	PE1	0.784	0.615			
	PE2	0.663	0.440	0.583	0.847	0.823
	PE3	0.831	0.691			
	PE4	0.765	0.585			
Effort Expectancy (EE)	EE1	0.873	0.762	0.654	0.882	0.857
	EE2	0.898	0.806			
	EE3	0.753	0.567			
	EE4	0.694	0.482			
Social Influence (SI)	SI1	0.827	0.684	0.641	0.877	0.862
	SI2	0.739	0.546			
	SI3	0.848	0.719			
	SI4	0.784	0.615			
Perceived Security (PS)	PS1	0.874	0.764	0.58	0.846	0.831
	PS2	0.721	0.520			
	PS3	0.751	0.564			
	PS4	0.687	0.472			
Trust (TS)	TS1	0.716	0.513	0.564	0.838	0.807
	TS2	0.767	0.588			
	TS3	0.765	0.585			
	TS4	0.754	0.569			
Intention to use ChatGPT (law perspective) (IU)	IU1	0.844	0.712	0.694	0.901	0.872
	IU2	0.856	0.733			
	IU3	0.798	0.637			
	IU4	0.834	0.696			

FL = Factor Loading, FLS = Factor Loading Squared, AVE= Average Variance Extracted, CR= Composite Reliability.

Bollen (2014) proposed a factor loading of at least 0.50; and a factor loading of 0.70 or higher would be considered as ideal. Based on the results shown in Table 1, all items were accepted as the factor loadings were between 0.663 and 0.898, which was larger than the cut-off value proposed by Bollen (2014).

Convergent validity in factor loadings can be evaluated through composite reliability (CR) and average variance extracted (AVE), and CR of higher than 0.7 denotes strong internal consistency. In this study, the achieved scores of composite reliability (CR) were between 0.838 and 0.901, denoting strong internal consistency. For the average variance extracted (AVE) values, they were all larger than the cut-off value of 0.50 as proposed by Hair et al. (2011), specifically between 0.564 and 0.694. Hence, all the latent variables fulfill the requirements for convergent validity affirmation.

Table 2
HTMT analysis

	PE	EE	SI	PS	TS	IU
PE						
EE	0.612					
SI	0.735	0.654				
PS	0.622	0.695	0.742			
TS	0.764	0.463	0.523	0.551		
IU	0.573	0.688	0.619	0.639	0.640	

HTMT analyses were carried out and as shown in Table 2, the achieved values were all lower than 0.85, which demonstrates problem-free discriminant validity. Among the reflective constructs, Henseler et al. (2015) indicated that HTMT values of lower than 0.90 would denote discriminant validity. The findings accordingly showed no overlapping items in the impacted constructs based on the viewpoints of the respondents. Results also showed no collinearity issues among the latent constructs (multicollinearity). Results in Table 1 and Table 2 led to the formation of the final best-fitting model in the following Fig. 1.

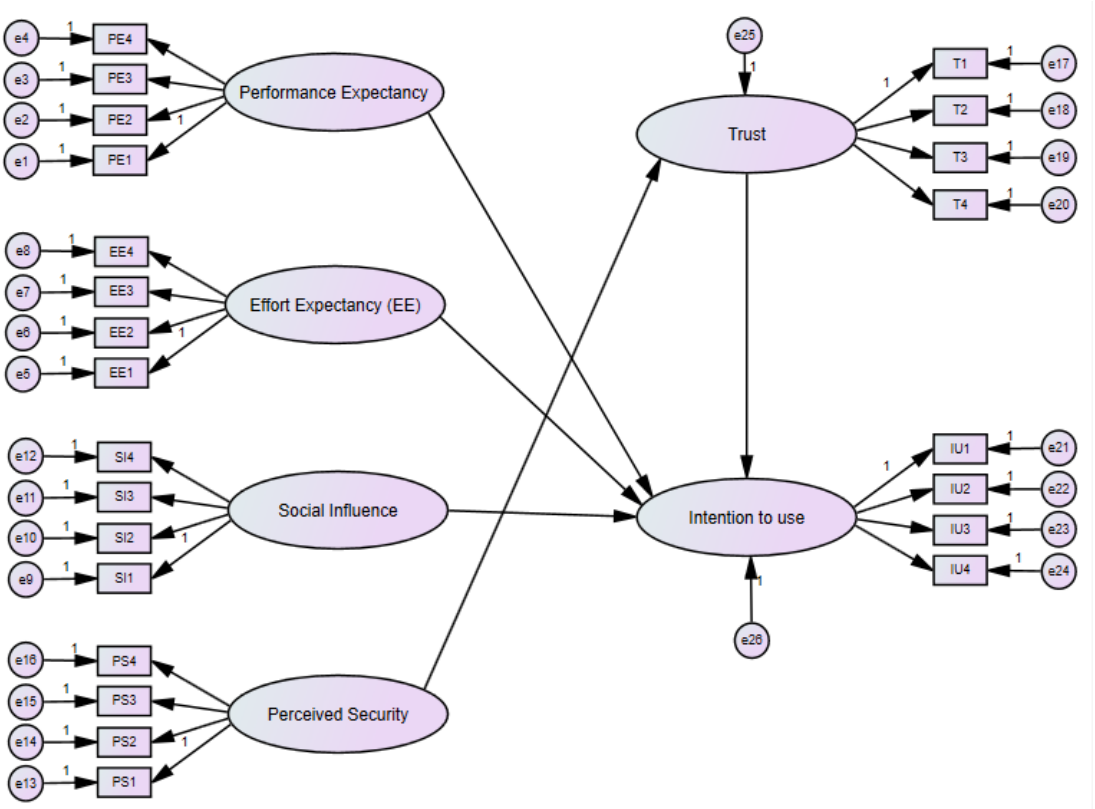

Fig. 1. Final best fitting CFA model

5.1.2. Goodness of fit

The measurement model of this study comprised 6 variables covered by 24 items, and the model was evaluated using CFA run through AMOS. With respect to the major model fit indices, results showed that some measures were not within the bounds of recommended cut-off values of the model fit (Chi-square χ 2(P > 0.05) as follows; Normed Chi-Square (χ2 /df) 1.0≦ χ 2 /df ≦3; RAMSE< 0.08, NFI ≥ 0.90; CFI ≥ 0.90; IFI ≥ 0.90; TLI ≥ 0.90. Based on Chen (2007), the model had a dissatisfactory model fit. Table 3 accordingly displays the Model fit statistics for the main measurement model.

The measurement model, comprising 6 variables measured by 24 items, was assessed through Confirmatory Factor Analysis (CFA) using AMOS. However, per Chen's (2007) findings, the model demonstrated unsatisfactory fit based on major indices. Some measures did not meet recommended threshold values, including Chi-square (χ^2) with p-value > 0.05, Normed Chi-Square (χ^2/df) outside the 1.0-3.0 range, SRMR>0.08, RMSEA > 0.08, NFI < 0.90, CFI < 0.90, IFI < 0.90, and TLI < 0.90. Refer to Table (3) for a summary of model fit statistics for the primary measurement model.

Table 3
Primary measurement model fit

χ2	χ2/df	SRMR	CFI	TLI	NFI	IFI	RMSEA
1312.346	6.512	0.167	0.764	0.732	0.735	0.761	0.121

The main measurement model was improved in terms of its fitness, and so, its factor loadings and modification indices were examined. The χ^2 to degrees of freedom (df) ratio which is an indicator of model goodness-of-fit scored a value 1.874 which is lower than the cut-off value of 3.0. Hence, an acceptable fit was achieved. For items with high modification indices, correlations among their error terms were included, as a solution to the fitness issue. As displayed in Table 3, there is a strong model fit with SRMR < 0.08, CFI > 0.90, TLI > 0.90, NFI > 0.90, IFI > 0.90, and RMSEA < 0.1. Hence, an excellent fit for the hypothesized model to the current data can be affirmed. A good fit is demonstrated by the refined measurement model (see Table 4).

Table 4
Final measurement model fit

χ2	χ2/df	SRMR	CFI	TLI	NFI	IFI	RMSEA
437.451	1.874	0.037	0.954	0.951	0.916	0.959	0.053

5.1.3. Testing the hypotheses

This study employed the variance-based Structural Equation Model (SEM), Partial Least Squares (PLS) in hypotheses testing. The SEM results of the study hypothesis testing can be obtained from the following Table 5.

Table 5
Structural equation modelling regression weights

				Estimate	S.E.	C.R.	P	Result
H1	**PE**	→	**IU**	0.367	0.044	6.085	***	Supported
H2	**EE**	→	**IU**	0.058	0.058	1.154	0.262	Not Supported
H3	**SI**	→	**IU**	0.037	0.058	1.62	0.154	Not Supported
H4	**PS**	→	**TR**	0.328	0.045	5.372	***	Supported
H5	**TR**	→	**IU**	0.214	0.046	4.573	***	Supported

S.E. = Standard errors of the regression weights, C.R. = Critical Ratio, P = p-value (*<0.05, **<0.01, ***<0.001)

Based on the summarised results shown Table 5 above, it can be affirmed that results showed a positive significant impact of Performance Expectancy (PE) on the Intents towards ChatGPT usage (IU). Regression weights showed significance of route with the p-value (***) of lower than 0.001 and critical ratio value of higher than 2 as proposed by Byrne (2013). The first alternative hypothesis was thus supported. Regression weights showed insignificant impact of Effort Expectancy (EE) on the Intents towards ChatGPT usage (IU). Accordingly, the critical ratio value was lower than 2 while the p-value (0.262) was greater than 0.05, which demonstrates insignificance of the path. Based on Byrne (2013), the second null hypothesis was accepted.

Also, regression weights showed insignificant impact of Social Influence (SI) on the Intents towards ChatGPT usage (IU). Accordingly, the critical ratio value is less than 2 while the p-value is 0.154 which is greater than 0.05. Based on Byrne (2013), the path is not significant. The third null hypothesis was hence accepted. Moreover, regression weights showed positive impact of Performance Security (PS) on Trust (TR), as the route is significant with p-value (***) of lower than 0.001 and the crucial ratio value of greater than 2 as proposed by Byrne (2013). The fourth alternative hypothesis was hence supported. Further, regression weights showed positive significant impact of Trust (TR) on the Intents towards ChatGPT usage (IU), as the route is significant with p-value (***) of lower than 0.001 and the crucial ratio value of greater than 2 as proposed by Byrne (2013). The fifth alternative hypothesis was hence accepted.

Based on Table (6), regression weights showed a positive significant impact of Performance Security (PS) on Trust (TR), with the value of critical ratio of more than 2 while the p-value (***) is smaller than 0.001. Based on Byrne (2013), the path is significant. Regression weights showed a positive significant impact of Performance Security (PS) on the Intents towards ChatGPT usage (IU). The path is significant, as proven by the value of critical ratio that is larger than 2 and the p-value (***) that is smaller than 0.001. Also, regression weights showed significant impact of Trust (TR) on the Intents towards ChatGPT usage (IU), The path is significant, as proven by the value of critical ratio that is larger than 2 and the p-value (***) that is smaller than 0.001. The

mediation of Trust in the relation between Perceived Security (PS) and the Intents towards ChatGPT usage (IU) was proven by the results as well.

Table 6
Structural equation modelling regression weights

			Estimate	S.E.	C.R.	P	Effect	R^2
PS	→	**TR**	0.328	0.045	5.372	***	0.325	0.314
PS	→	**IU**	0.824	0.061	3.432	***	0.156	0.257
			Estimate	**S.E.**	**C.R.**	**P**	**Effect**	**R^2**
TR	→	**IU**	0.214	0.046	4.573	***	0.210	-
Direct Effect of PS on IU					**0.156**			
Total Effect of PS on IU with mediator (Trust)					**0.421**			

S.E. = Standard errors of the regression weights, C.R. = Critical Ratio, P = p-value (*<0.05, **<0.01, ***<0.001)

The R^2 value shows the ability of the independent variable in explaining the changes in the dependent variable. Results in this study showed that Perceived Security (PS) can explain 31.4% of the variation in Trust (TR) (R^2 = 0.314). Meanwhile, results showed the ability of Perceived Security (PS) in explaining 25.7% of the variation in the Intents towards ChatGPT usage (IU).

6. Discussion

A theoretical model was proposed in this study. Additionally, factors with potential impact on the intent of students towards ChatGPT usage were accordingly evaluated. The results achieved were showing a positive significant impact of PE and FC on the intents of students towards ChatGPT usage. On the other hand, the impact of EE and SI was not significant on the intents of students towards ChatGPT usage.

Results show PE as a construct significantly affecting the intents of students towards ChatGPT usage. Some past studies were relevant, noting that for students, the perception that the use of ChatGPT as useful will lead to the formation of a positive intention toward its usage, and the students will use the technology in their learning. Additionally, PE was found to be a crucial factor in determining and predicting ChatGPT usage. Through its ability in providing personalized learning experiences to users, ChatGPT has the potential in playing important roles in those relationships. ChatGPT has the ability to effectively comprehend the learning styles and needs of students, as this technology employs cutting-edge language algorithm processing. With such personalized and customized support and feedback, learners could deal with the challenges and accomplish their learning objectives easier and faster, leading to improved expectancy of these students, and in turn, they will effectively and frequently use ChatGPT. Hence, ChatGPT developers and designers need to find ways to make the tool more useful and more beneficial to users. The increased usefulness of ChatGPT will affect their usage intent.

Contrariwise, the results did not show the impact of EE on the intent of students towards ChatGPT usage. Similar results were reported in a number of studies. However, some studies (Fauz et al., 2018; Sultana, 2020) were reporting contradictory outcomes. Such findings may demonstrate that students do not find ChatGPT usage challenging or difficult, and for this reason, their intent is not affected by their effort. Also, living in the digital age allows students access to various types of technologies and smart devices, and so, ChatGPT usage may not appear daunting to them. As such, in this regard, EE does not affect the intent of students towards ChatGPT usage. Moreover, for most students, ChatGPT today is likely perceived as a simple and convenient technology, because today, students are exposed to advanced technologies. Some user-friendly and modern technologies today take into account the attributes of the user, and this eases usage to users, in this context, to students. Such ease might not have an impact on user intention.

With respect to SI, results showed its insignificant impact on the intent of students towards ChatGPT usage, as also reported in several past studies. On the other hand, some studies were reporting otherwise. This shows that for these students, ChatGPT usage does not require them to seek help or support from their significant others or peers like their family, teachers or friends. Also, considering that the need for a sense of belonging seems to increase with age; SI may affect university students less than it does to younger students, because it is likely that university students are not as affected by the opinions of others in terms of a given technology. Not only that, students today may be less concerned over the opinions of others on their ChatGPT usage, as they found the technology useful (performance), affecting their use intention. Also, the significant impact of PE on the intent of users towards technology usage may reduce the significance of SI. Additionally, this study employed only three items in measuring SI, and this may affect the study findings, and for this reason, more items are necessary in measuring this construct.

The critical role of perceived security in improving the trust of both user and supplier toward e-government has been repetitively reported. As mentioned by Jeon et al. (2018), security assurance draws users and reinforces the impacts of social media. Furthermore, a number of studies including Sebetci (2015), Warkentin et al. (2018) and Khan et al. (2021) also have reported the

significant impact of trust on the purpose and acceptance of new skills (e.g., as e-government). Additionally, in the positive linkage between perceived security and e-government adoption, the mediation of trust has been reported.

6.1. Theoretical implications

Thus far, no past studies on AI applications such as ChatGPT employed the UTAUT model within the Arab context especially. Hence, this study was the first of its kind, enriching the extant literature.

6.2. Practical implications

The findings of this study aptly affirm the factors with potential impact on the intents of students towards ChatGPT usage. Results showed significant impact of PE on the intent of students towards ChatGPT usage, which demonstrates that the awareness of students of ChatGPT benefits in learning will impact their intents to use the technology. This will create a positive attitude toward the program. It is hence necessary for both academics and lecturers to educate the students on the benefits of ChatGPT and motivate them to effectively use the program to facilitate their learning.

6.3. Limitations

A number of limitations have been discovered in this study. The first limitation relates to the use of SEM AMOS analysis in data processing. It should be noted that this study had adequate sample size for the analysis but the use of SEM AMOS may affect generalizability of the findings. For this reason, the use of larger samples may improve generalizability. Also, this study was looking into the original factors in the UTAUT model and the achieved outcomes were interesting. Hence, the next studies may consider expanding the UTAUT model by adding other factors including system quality or satisfaction of students towards ChatGPT. Lastly, this similar study should be carried out involving students in other universities and grades. This could increase the generalizability of the results.

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