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## Determinants of Intention to Use ChatGPT for Professional Development among Omani EFL Pre-service Teachers

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**Abstract.** The integration of ChatGPT within the workplace holds the promise of enhancing professional communication, streamlining task automation, and expediting access to information and assistance. However, the ultimate success of this endeavour hinges on the proactive adoption and utilisation of ChatGPT by professionals. This study endeavours to illuminate the utilisation of ChatGPT for professional development by pre-service teachers specialising in English as a Foreign Language (EFL) in Oman. To this end, it employs an extended conceptual framework rooted in the technology acceptance model (TAM), incorporating critical exogenous factors such as instructor support, personal innovativeness, and perceived learning value. Confirmatory factor analysis (CFA) was employed to assess the construct validity and reliability of the model's components. Utilising a cross-sectional research design, a structured questionnaire was administered to a sample comprising 280 EFL pre-service teachers in Oman. The structural model elucidated that external factors—namely, instructor support, personal innovativeness, and perceived learning value—exerted a statistically significant influence on the EFL pre-service teachers' perceptions of the utility and ease of use of ChatGPT. Moreover, it emerged that the perceived utility and ease of use of ChatGPT were instrumental in shaping the intention of Omani EFL pre-service teachers to embrace this AI-powered tool for their professional development endeavours. Collectively, the model effectively accounted for 63% of the variance in the intention of EFL pre-service teachers in Oman to adopt ChatGPT for their professional growth. These results have practical implications for educators and institutions seeking to enhance the integration of innovative technologies like ChatGPT in language education and professional development programs.

**Keywords:** ChatGPT; EFL pre-service teachers; professional development; structural equation modelling; technology acceptance model (TAM)

## 1. Introduction

The utilisation of artificial intelligence (AI) in educational operations has garnered significant recent attention, becoming a focal point of extensive research. Across various industries and enterprises, the recognition of AI's transformative potential in redefining operational procedures, enhancing decision-making capabilities and fostering organisational expansion has become increasingly apparent. Professionals are actively assessing AI systems with a keen focus on their purported ability to amplify productivity, optimise efficiency and furnish precise and insightful analytical outputs. Artificial intelligence (AI) has unquestionably emerged as a harbinger of transformation within the realm of education, poised to profoundly reshape conventional teaching and learning paradigms (Chen et al., 2022; Ifenthaler & Schumacher, 2022). In the wake of AI innovations, Chatbots and language models, such as ChatGPT, have surfaced as potent tools with the potential to revolutionise the educational landscape (Kuhail et al., 2023). These AI-driven Chatbots engage in human-like conversations, furnishing students with immediate support and feedback, thereby transcending their initial role of administrative efficiency (Pillai et al., 2023).

The integration of ChatGPT within the workplace holds the promise of enhancing professional communication, streamlining task automation and expediting access to information and assistance. However, the ultimate success of this endeavour hinges on the proactive adoption and utilisation of ChatGPT by professionals. Beyond their administrative prowess, Chatbots have demonstrated a remarkable capacity to tailor learning experiences to individual student needs, engendering heightened student engagement, as underscored by empirical studies conducted by Abbas et al. (2023) and Mijwil and Aljanabi (2023). This transformative educational milieu is anchored by ChatGPT, a publicly accessible AI-powered Chatbot that operates on the Generative Pre-Trained Transformer (GPT) 3.5 model. Notably, Open AI's introduction of GPT-4, partially integrated into ChatGPT Plus, has endowed ChatGPT with the unique capability to process both image and text inputs, enabling human-level performance across various professional and academic benchmarks. The adaptive nature of ChatGPT holds significant promise in rendering education more accessible, efficient and effective on a global scale (Mijwil & Aljanabi, 2023)

## 2. Literature Review

### 2.1 ChatGPT in Education

The potential advantages of AI-based Chatbots in education have garnered substantial attention, encompassing increased accessibility to information, personalised assistance through conversation history recall, and the provision of timely feedback that closely emulates human interaction (Al-Sharafi et al., 2022; Hwang & Chang, 2021; Jeon, 2021; Lee & Yeo, 2022). However, amid these benefits, concerns have arisen. ChatGPT can augment scientific writing skills and deliver personalised learning experiences for healthcare students, while also cautioning against potential pitfalls related to copyright, plagiarism and ethical considerations in healthcare education. These nuanced concerns underscore the imperative need for a comprehensive exploration of the multifaceted impact of this technology (Sallam, 2023).

Nonetheless, despite early insights into the potential and challenges associated with ChatGPT, it remains a relatively nascent technology, with limited research elucidating its utilisation and the factors shaping the intention to use (IU) ChatGPT for educational purposes, especially within the context of Omani English as a Foreign Language (EFL) pre-service teachers (Lund & Wang, 2023; Taecharungroj, 2023). To bridge this research lacuna and address the pressing necessity to comprehend the drivers of the intention to use ChatGPT for professional development among Omani EFL pre-service teachers, the present study adopts the technology acceptance model (TAM) as its foundational theoretical framework. TAM, a well-entrenched model in the domain of technology adoption, elucidates how users' perceptions of the usefulness and ease of use of technology significantly influence their acceptance and actual utilisation of that technology (Davis, 1989). In consonance with TAM, the perceived usefulness and perceived ease of use are pivotal in shaping users' intentions to employ a technology, thereby impacting their subsequent actual utilisation of it.

However, it is imperative to acknowledge, as illuminated by Venkatesh (2012) that the factors influencing the adoption of new information systems can vary substantially contingent upon specific contextual and situational factors. Consequently, this study augments the TAM framework by integrating two pivotal moderating variables: "personal innovativeness" (a user characteristic) and "information accuracy" (a contextual factor).

Personal innovativeness, as posited by previous research (Singh, 2023) serves as a catalyst for creativity and innovation, rendering individuals exhibiting higher levels of innovativeness more inclined to embrace novel technologies—a disposition of paramount importance for the successful implementation of innovation. Conversely, information accuracy, predicated upon the belief that information is credible, believable, correct and precise, assumes a pivotal role in shaping students' learning experiences. Accurate information, as evidenced in the extant literature (Iranmanesh et al., 2012) empowers students to make informed decisions, derive dependable conclusions, and navigate the learning process efficaciously. Conversely, inaccurate information has the potential to sow confusion and engender misinterpretation, thereby undermining the educational enterprise.

This research endeavour strives to unveil the determinants influencing the intention to use ChatGPT among Omani EFL pre-service teachers within the TAM framework. By delving into these intricate facets, we aspire to offer a comprehensive understanding of the factors propelling the adoption of ChatGPT in the specific context of professional development among Omani EFL pre-service teachers. The results of this study are anticipated to provide educational institutions, policymakers and AI Chatbot developers with insightful information that will ultimately increase the use of technology in education and help realise its transformative potential.

## **2.2 Theoretical Framework**

The technology acceptance model (TAM), formulated by Davis (1989), constitutes the conceptual underpinning of this study. Widely acclaimed for its insights into users' acceptance and utilisation of technology, TAM posits that perceived

usefulness (PU) and perceived ease of use (PEOU) are pivotal elements shaping users' inclination to adopt and engage with technology. PU pertains to users' confidence in the technology's potential to enhance their performance and facilitate goal attainment, whereas PEOU gauges users' perception of the technology's simplicity and user-friendliness. Earlier research (Alharbi & Drew, 2014; Elkaseh, Wong, & Fung, 2016; Venkatesh, & Bala, 2008) has established that both PU and PEOU significantly influence users' attitudes and intentions towards technology adoption. The selection of TAM as the theoretical foundation stems from several considerations. Firstly, TAM's brevity and simplicity render it an excellent choice (Drueke et al., 2021). Secondly, TAM has consistently proven its applicability in m-learning contexts (Al-Emran et al., 2018), illustrating its efficacy in assessing the acceptance of mobile learning (Khanh & Gim, 2014). TAM remains the predominant model for scrutinising technology acceptance and utilisation. Thirdly, despite its widespread application in technology adoption research, its utilisation in the realm of artificial intelligence in education and professional development within universities remains limited, accentuating the need to bolster its explanatory capacity in this emerging context. The research framework for this study is visually represented in the ensuing diagram, integrating constructs including PU, PEOU, value learning, instructor assistance and personal Innovativeness to investigate their collective influence on ChatGPT intention to use (see Figure 1).

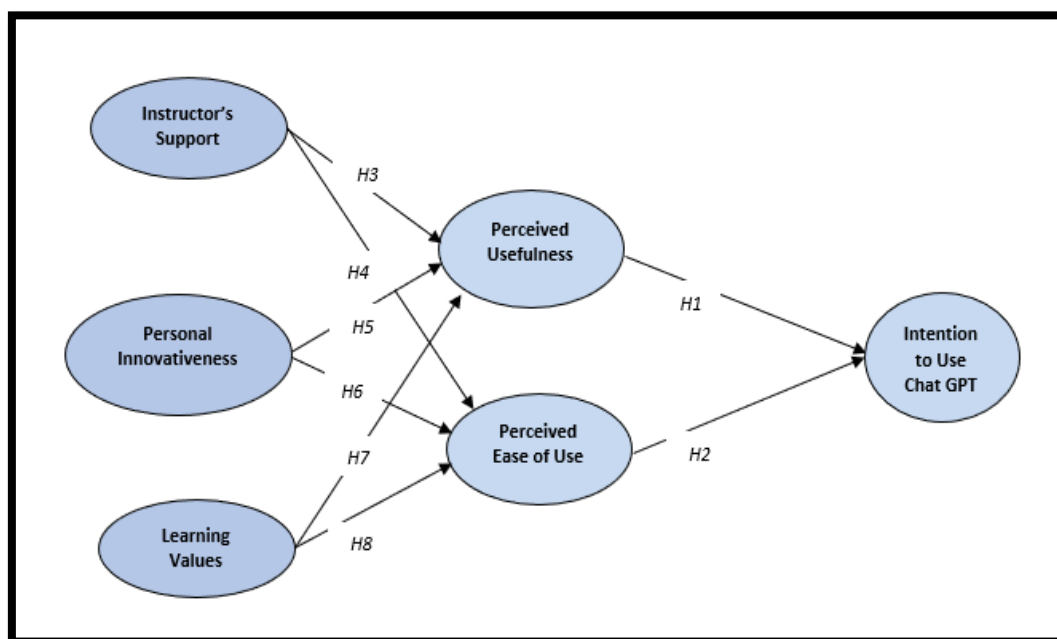


Figure 1: Hypothesised model of the research

## 2.3 Hypothesis Development

### 2.3.1 TAM Variables

TAM is a foundational framework for understanding the adoption of new technology, renowned for its reliability and effectiveness. TAM's strength lies in its simplicity, allowing for easy extensions and adaptations without complicating

its core structure. TAM comprises three fundamental constructs: PU, PEOU and BI towards technology adoption, as initially proposed by Davis (1989).

PU reflects an individual's perception of how technology can enhance their performance. PEOU assesses an individual's confidence in using technology effortlessly and with minimal effort. Behavioural intention (BI) indicates an individual's intent to incorporate technology into their activities. These constructs have gained empirical support across a range of technology adoption studies (Hung & Chou, 2015; Venkatesh & Davis, 2000). TAM and its expansions stress that PU and PEOU are the main factors influencing people's intentions to adopt new technologies. Studies (Sun & Gao, 2020; Venkatesh et al., 2023) have repeatedly demonstrated that people are more likely to adopt technology when they see it as useful. Building on this well-established foundation, we formulate the following hypotheses:

H1: Omani EFL pre-service teachers PU of ChatGPT positively predicts their intention to adopt ChatGPT.

H2: Omani EFL pre-service teachers PEOU of ChatGPT positively predicts their intention to adopt ChatGPT.

### 2.3.2. External variables

#### 2.3.2.1 Instructor support:

Incorporating TAM, it is evident that users' readiness to embrace technology also extends to the utilisation of ChatGPT in the professional development of pre-service teachers. External influences, particularly social ones, can significantly impact the adoption of this technology. Among these, the perceived support from external sources, such as educators, peers, or influential figures in education, holds a crucial position.

In the context of using ChatGPT for pre-service teachers' professional development, the influence of educators' support is paramount. When educators offer guidance, motivation and feedback to pre-service teachers using ChatGPT, it can enhance their perception of the technology's advantages. Recent research demonstrates a direct link between instructor support and learners' perceptions of technology's value and ease of use. For instance, Sun and Gao (2020) found that university students who received substantial encouragement and support from their language instructors while using a mobile app for English learning had a more positive perception of the app's utility and ease of use.

A substantial body of research highlights the role of instructor support in shaping students' perceptions of technology usefulness. Studies (Venkatesh et al., 2023) have shown that instructor support, in the form of guidance, encouragement and assistance significantly enhances students' perceptions of technology's utility. Mousa et al. (2020) indicate that, when instructors provide support, it facilitates students' perception of technology as more user-friendly. Based on these observations, we propose the following hypotheses:

H3: Instructor support positively predicts Omani EFL pre-service teachers' PU of ChatGPT for their professional development.

H4: Instructor support positively predicts Omani EFL pre-service teachers' PEOU ChatGPT for their professional development.

#### 2.3.2.2 Personal innovativeness:

Personal innovativeness, defined as an individual's eagerness to embrace emerging information technologies (Al-Adwan et al., 2013) is linked to a proclivity for exploring new technological advancements (Hew et al., 2019). Innovators play a pivotal role in technology adoption and hold a special place in the competitive landscape (Agarwal & Prasad, 1989).

Innovators readily adopt technology, even with limited or unfavourable information, highlighting the significant role of personal innovativeness in moderating adoption decisions (Agarwal & Prasad, 1989).

They exhibit a greater willingness to face challenges tied to new technology adoption (Brusch & Rappel, 2020). Numerous studies support the connection between personal innovativeness and key components of TAM, such as PU and PEOU (Kabra et al., 2017; Ngubelanga & Duffett, 2021; Mazman, 2019; Senali et al., 2023). Consequently, factors like PU and PEOU may have reduced influence on their adoption decisions (Alkawsi, Ali, & Baashar, 2021)

Furthermore, individuals with high personal innovativeness are less influenced by external factors (Cheng, 2014; Jianlin & Qi, 2010; Khazaei & Tareq 2021). Innovators often disregard technological complexities and resource considerations, driven by their desire to be early adopters (Sitar-Taut et al., 2021). They are more inclined to embrace new technology, even when faced with disruptions to their established behaviours, due to their positive attitude towards innovation. This aligns with research findings (Agarwal, 1989; Kabra et al., 2017) emphasising that individuals with higher personal innovativeness are more willing to adopt technology, even when information about it is less favourable or limited. Consequently, they are more likely to perceive technology as useful. The notion that personal innovativeness positively predicts perceived usefulness is consistently supported in the literature with studies (Chen, Chen, & Lin, 2020; Ifenthaler & Schumacher, 2022) that

underscore that individuals with personal innovativeness are more likely to overlook factors like system complexity and resource availability when adopting new technologies. This willingness to embrace challenges and novelties facilitates a perception of technology as easy to use.

In light of these observations, we propose the following hypotheses:

H5: Personal innovativeness positively predicts Omani EFL pre-service teachers' PU of ChatGPT for their professional development.

H6: Personal innovativeness positively predicts Omani EFL pre-service teachers' PEOU of ChatGPT for their professional development.

### 2.3.2.3 Learning value:

Learning value refers to how users perceive the utility of a system (Sharif, Afshan, & Qureshi, 2019). It is crucial in assessing ChatGPT's potential as an instructional tool, especially in terms of time efficiency and its impact on learning (Durik et al., 2015; Zwain, 2019). The effectiveness of instructional tools directly affects students' confidence and motivation (Ain, Kaur, & Waheed, 2016; Hong et al., 2022). If learners don't see a tool as beneficial for their learning, it can diminish their enthusiasm (Dajani & Hegleh, 2019).

Studies (Sharif et al., 2019; Zwain, 2019) consistently show that learners' perception of technology's value significantly influences their attitudes and intentions towards technology adoption. Studies have found a positive link between learning values and the perceived usefulness of technology (Smutny & Schreeiberova, 2020; Zacharis & Niikolopoulou, 2022) while Yin et al. (2022) discovered a positive correlation between learning values and the perceived ease of use of educational technology (Yin et al., 2021), thereby supporting these findings and indicating that a higher perceived learning value is associated with more favourable perceptions of technology's ease of use.

Chatbots have gained attention as interactive educational tools (Metheny, McWhirter, & O'Neil, 2008). They provide relevant information, engage in open-ended interactions and enhance perceived learning value (Nikou & Economides, 2017). Lee, Kozar, and Larsen (2003), Kline (2008), Black, Babin, and Anderson (2014) and Hair et al. (2014) all provide empirical support for the connection between learning value and intention to use (IU). ChatGPT, as a Chatbot, can enhance writing competencies by providing feedback and suggestions for improvement (Yin, Yang, & Xiaobin, 2021) In light of this, we propose the following hypotheses:

H7: Learning values positively predict Omani EFL pre-service teachers' PU of ChatGPT for their professional development.

H8: Learning values positively predict Omani EFL pre-service teachers' PEOU of ChatGPT for their professional development.

## 3. Methodology

### 3.1 Instrument

The current study adopts a quantitative research approach, employing a cross-sectional design for data collection to examine relationships between variables. The simultaneous collection of data on multiple variables affords the ability to analyse correlations or associations among different factors within the population. A structured questionnaire, comprising 29 items organised into six distinct constructs was employed, as detailed in Appendix A. The questionnaire items were derived from previous research but were suitably adapted to align with the specific technological context and domain under examination.

The measurement of learning value was assessed using six items adapted by Sitar-Taut and Mican (2021). An exemplar item reads as follows: "The utilisation of ChatGPT enhances my knowledge and contributes to my professional success". To evaluate instructors' support, four items from Metheny, McWhirter, and O'Neil (2008) were utilised, including a sample item such as "My instructors

actively encourage me to incorporate ChatGPT into my professional development". Personal innovativeness was adapted from the Nikou and Economides (2017), featuring sample items like "I am inclined to experiment with novel information technology". Perceived usefulness was appraised through six items adapted from Davis (1989) incorporating sample items such as "Using ChatGPT would enhance my professional development". Perceived ease of use was assessed using five items from Davis (1989) with sample items like "Using ChatGPT is straightforward for my professional development". Pre-service teachers' intention to adopt ChatGPT was assessed with four items adapted from Lee, Kozar, and Larsen (2003) and Venkatesh and Bala (2008) illustrated by a sample item: "I have the intention to employ ChatGPT to support my professional development in the future".

In the survey, a five-point Likert scale was used with respondents indicating their level of agreement or frequency with each statement that most accurately conveyed their intention to use and perception. To establish the face validity of the measurement items, input was solicited from English education professors and academic researchers across various universities. Their assessments appraised the clarity and length of each item.

Furthermore, to validate the questionnaire, all questions and items were integrated into a validation template and disseminated to five experts in the field of education. These experts were tasked with validating the alignment of the items with the operational definitions of the constructs and providing feedback on item clarity. Finally, the internal reliability of the research model was assessed using Cronbach's alpha for the six constructs: The behaviour intention to use ChatGPT, PU, PEOU, instructor's support, personal innovativeness and learning values.

### **3.2 Research Context and Participants**

This research was conducted at Al-Ain University, a prestigious academic institution situated in the United Arab Emirates (UAE). The focus of our investigation was the professional diploma in teaching, a comprehensive year-long programme meticulously designed to provide advanced knowledge and practical teaching skills tailored for diverse educational contexts. This programme specifically caters to educators with undergraduate or postgraduate degrees who aspire to acquire professional teaching qualifications. Its overarching goal is to enhance the pedagogical competence of participants by equipping them with the essential pedagogical strategies, instructional methodologies and educational principles needed for excellence in their teaching roles.

The research sample consisted of 280 Omani postgraduate students pursuing the Professional Diploma in Teaching with a specialisation in English as a Foreign Language (EFL). These students were distributed across three academic disciplines: Linguistics (N = 80), Translation (N = 73), and Arts (N = 127). The gender composition of the sample included 40 male participants and 240 female participants, all falling within the age range of 20 to 40 years. Our sampling approach employed simple random sampling, wherein we compiled a comprehensive list of English major students from the university's faculty databases. Subsequently, we selected the required sample size of 280 participants by randomly choosing matriculation numbers from this compiled list. It is worth



noting that this sample size of 280 participants was deemed sufficient to accomplish the study's research objectives and facilitate the subsequent confirmatory factor analysis (CFA) analysis (Hair et al., 2021).

### **3.3 Data Analysis**

Descriptive analysis and data screening were conducted utilising SPSS version 26, while structural equation modelling (SEM) was executed using AMOS version 26.0. Subsequently, CFA was employed to assess the initial measurement models, ensuring their construct reliability, as well as confirming their convergent and discriminant validity, in line with established methods (Byrne, 2013; Zogheib et al., 2015). In the subsequent stage, the study's hypothesised model was evaluated using the structural model within AMOS version 26 (Hair et al., 2021).

## **4. Results**

### **4.1 Measurement Validation**

In the current study, confirmatory factor analysis was employed to assess the construct validity and reliability of the model's components. The CFA was conducted on seven constructs: the behaviour intention to use ChatGPT, PU, PEOU, instructor's support, personal innovativeness and learning values, as depicted in Figure 2. The primary objective of the CFA was to establish the dimensions' reliability within the studied population.

Several iterations were made to refine the measurement model and address problematic items with low loadings (IS4 and INV6), leading to their elimination. After these adjustments, the final measurement model exhibited favourable outcomes. The overall model fit was robust, demonstrated by the chi-square ( $X^2$ ) value of 807.596,  $df = 335$ , and a p-value of 0.000. Additionally, RMSEA stood at 0.071, well below the acceptable threshold of .08 (Zogheib et al., 2015). Moreover, the CFI recorded 0.941, and TLI was .934, both surpassing the recommended benchmark of 0.90. These collective goodness-of-fit indicators affirm the excellent alignment of the measurement model with the data (refer to Figure 2).

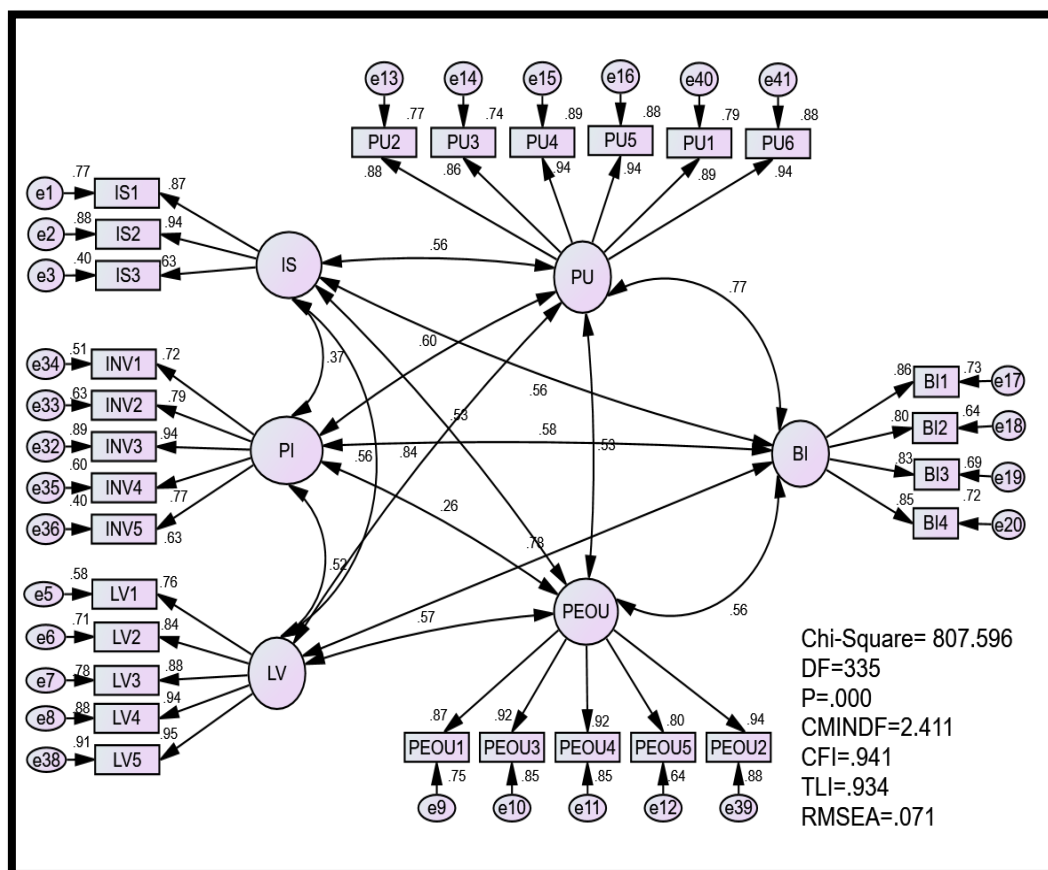


Figure 2: Study measurement model

Note: (BI) behavioural intention, (PU) perceived usefulness, (PEOU) perceived ease of use, (IS) instructors' support, (PI) personal innovativeness.

The assessment of the measuring model for EFL Omani EFL pre-service teachers' intention to use CHATGPT for their professional development revealed satisfactory psychometric characteristics through the evaluation of its convergent validity, discriminant validity and composite reliability. The loadings of the items, illustrated in Figure 1, were determined to be acceptable, surpassing the recommended threshold of 0.50. This observation indicates strong convergent validity, supported by the fact that all items exhibited loadings above 0.50, while the average variance exceeded 0.50, in accordance with the guidelines outlined by Hair et al. (2021). Furthermore, the model's reliability is firmly established, as indicated by the composite reliability (CR) values, all of which exceeded the established threshold of 0.70, aligning with the references of Hair et al. (2008) and Kline (2008) (refer to Table 1).

**Table 1: Convergent validity and reliability of the measurement constructs**

Construct	Item	Factor loadings	S.E.	C.R.	P	CR	AVE
Learning Values	LV1	.763				0.944	0.772
	LV2	.840	.075	15.364	***		
	LV3	.882	.076	16.336	***		
	LV4	.940	.081	17.729	***		
	LV5	.955	.080	18.069	***		
Perceived Usefulness	PU2	.876				0.966	0.825
	PU6	.936	.047	24.545	***		
	PU1	.891	.044	21.826	***		
	PU4	.944	.043	25.086	***		
	PU3	.863	.047	20.401	***		
	PU5	.936	.047	24.517	***		
Perceived Ease of Use	PEOU4	.924				0.951	0.795
	PEOU3	.921	.036	27.188	***		
	PEOU5	.803	.044	19.121	***		
	PEOU1	.866	.040	22.779	***		
	PEOU2	.936	.035	28.691	***		
Intention to Use Chat GPT	BI1	.857				0.902	0.698
	BI2	.802	.053	16.347	***		
	BI3	.831	.063	17.324	***		
	BI4	.851	.059	18.001	***		
Instructor's Support	IS3	.632	.063	11.760	***	0.863	0.682
	IS2	.939	.055	19.127	***		
	IS1	.875					
Personal Innovativeness	INV3	.944	.083	14.982	***	0.944	0.772
	INV2	.794	.092	12.908	***		
	INV1	.716					
	INV4	.771	.089	12.533	***		
	INV5	.635	.088	10.288	***		

Table 2 presents the average variance extracted (AVE) values diagonally, effectively showcasing divergent validity. Squared inter-factor correlation values, which signify shared variance, are situated above the diagonal, while inter-factor correlations are positioned below it. Notably, none of the inter-factor correlations surpass the threshold of 0.8, offering robust evidence in favour of discriminant validity, consistent with Kline (2008, 2021). Moreover, the presence of divergent validity is distinctly observed, as each AVE factor exhibits a higher value compared to its squared inter-correlations with all other factors. This observation underscores the distinctiveness of the study's factors, revealing minimal overlap and reinforcing their effective measurement of the intended constructs.

Table 2: Correlation matrix and average variance extracted

Construct	CR	AVE	PU	PI	IS	LV	BI	PEOU
PU	0.966	0.825	<b>0.908</b>					
PI	0.883	0.606	0.600	<b>0.779</b>				
IS	0.863	0.682	0.563	0.374	<b>0.826</b>			
LV	0.944	0.772	0.845	0.520	0.561	<b>0.879</b>		
BI	0.902	0.698	0.767	0.585	0.558	0.785	<b>0.836</b>	
PEOU	0.951	0.795	0.529	0.265	0.532	0.569	0.559	<b>0.891</b>

#### 4.2 Evaluation of the Structural Model and Hypothesis Testing

The validation and reliability assessment of the measurement model were performed, followed by the transformation of the model into a hypothesised structural model, wherein hypothesised causal paths were introduced to replace correlations between dimensions. Adhering to established best practices (Hair et al., 2021), only the exogenous constructs were allowed to retain correlations to address any potential covariance between dimensions. The results, based on 365 degrees of freedom, revealed a chi-square value of 846.918, a CMIN/df ratio of 2.498, a CFI of .937, and a TLI of .930. All these indices surpassed the recommended threshold of .90, signifying their robustness. Additionally, RMSEA value of .073 fell within the acceptable range of .08. These findings collectively indicated strong consistency with the hypothesised model, affirming that the structural model was a suitable fit for the data, as aligned with Kline (2023).

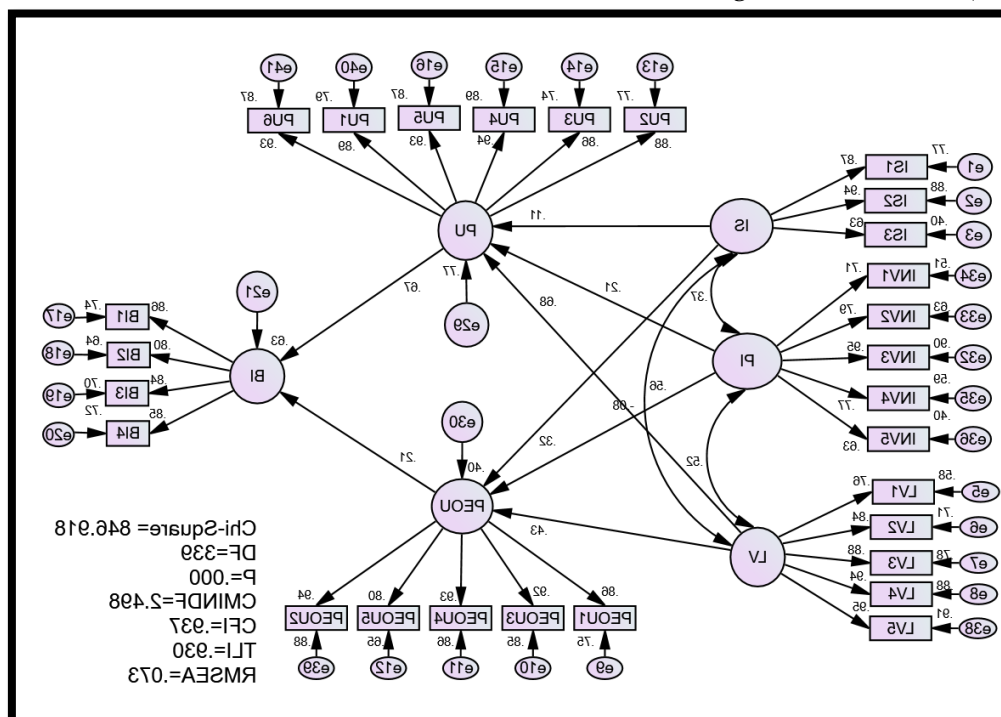


Figure 3: Study structural model

Figure 3 and Table 3 depict the outcomes of the finalised structural model, presenting standardised path coefficients. The results highlight that 35% of the variance in the EFL Omani EFL pre-service teachers' intention to use CHATGPT for their professional development can be elucidated by factors encompassing learning values, PU, PEOU, BI to use, instructor's support and personal innovativeness.

As observed in Figure 3 and Table 3, the direct and significant influence of both Omani EFL pre-service teachers' PU ( $\beta = .668, p < 0.05$ ) and PEOU ( $\beta = .213, p < 0.05$ ) on their BI of ChatGPT tools. In turn, both Omani EFL pre-service teachers' PU ( $\beta = .106, p < 0.05$ ) and PEOU ( $\beta = .320, p < 0.05$ ) are directly and significantly influenced by their instructors' support.

Moreover, Figure 3 unveils that Omani EFL pre-service teachers' personal innovativeness influences their PU ( $\beta = .212, p < 0.05$ ); however, it does not influence their PEOU ( $\beta = .077, p > 0.05$ ). Furthermore, learning values impact their PU ( $\beta = .681, p < 0.05$ ) and PEOU ( $\beta = .414, p < 0.05$ ).

**Table 3: The direct hypotheses**

Structural Path	$\beta$	C.R	P-value	Decision
	(>.2)	(>.196)		
H1 PU → BI	.668	11.471	0.000	Supported
H2 PEOU → BI	.213	4.199	0.000	Supported
H3 IS → PU	.106	2.537	0.011	Supported
H4 IS → PEOU	.320	4.957	0.000	Supported
H5 PI → PU	.212	4.999	0.000	Supported
H6 PI → PEOU	.077	-1.266	0.206	Not Supported
H7 LV → PU	.681	11.277	0.000	Supported
H8 LV → PEOU	.414	6.028	0.000	Supported

## 5. Discussion

The discussion and implications section of this study presents a comprehensive analysis of the extended technology acceptance model (TAM) applied to Omani EFL pre-service teachers' intention to use ChatGPT for their professional development. It is evident from the structural equation modelling (SEM) analysis that the extended TAM model is robust and provides valuable insights into the factors influencing their decision-making process.

The findings indicate that three external factors, namely personal innovativeness, instructor support and learning value, significantly impact Omani EFL pre-service teachers' intention to use ChatGPT for professional development. This highlights the importance of considering these factors when assessing the technology acceptance and decision-making processes among this specific group of

educators. Moreover, the study reveals that behavioural intention plays a crucial role in shaping the actual usage of ChatGPT for professional development, underscoring the significance of understanding individuals' motivations and intentions.

Notably, the expanded TAM model accounts for a substantial portion, 63%, of the variance in pre-service teachers' behavioural intention. This outcome demonstrates the model's effectiveness in explaining the factors driving Omani EFL pre-service teachers' intention to adopt ChatGPT, thereby achieving the primary research objective. The extended TAM model proves to be a valuable tool for comprehensively elucidating the complex dynamics of technology acceptance in this context.

Turning to the specific hypotheses tested, the results align with existing empirical evidence in the realm of technology adoption. Hypothesis 1 and Hypothesis 2 confirm that Omani EFL pre-service teachers' perceptions of ChatGPT's usefulness and ease of use positively influence their intention to use it for professional development. These findings are consistent with prior studies (Alharbi & Drew, 2014; Elkaseh et al., 2016; Zogheib et al., 2015) which emphasised the universality of these factors in shaping technology acceptance.

The investigation also explores the impact of instructor support, personal innovativeness and learning value on Omani EFL pre-service teachers' intention to use ChatGPT. Hypotheses 3 and 4 establish a positive relationship between instructor support and their perceptions of usefulness and ease of use, in line with previous research (Mousa et al., 2020; Shodipe & Ohanu, 2020). This reaffirms the pivotal role of instructors in facilitating technology adoption and highlights the need for supportive educational environments.

Similarly, Hypotheses 5 and 6 demonstrate the positive influence of personal innovativeness on Omani EFL pre-service teachers' perceptions of ChatGPT's usefulness and ease of use, consistent with prior findings (Mazman, 2019; Ngubelanga & Duffett, 2019; Rahman et al., 2017; Wang et al., 2020)). This underscores the significance of individual characteristics in shaping technology acceptance, emphasising the need for tailored interventions.

Lastly, Hypotheses 7 and 8 establish a positive relationship between learning value and Omani EFL pre-service teachers' perceptions of usefulness and ease of use, aligning with previous studies (Ain et al., 2016; Dajani & Hegleh, 2019; Zacharis & Nikolopoulou, 2022). This underscores the importance of the educational value derived from ChatGPT in influencing their perceptions and, subsequently, their intention to adopt it.

This study offers valuable insights into the factors that influence Omani EFL pre-service teachers' intention to use ChatGPT for professional development. The extended TAM model proves to be a robust framework for understanding technology acceptance in this context. The findings affirm the significance of personal innovativeness, instructor support and learning value, in addition to perceptions of usefulness and ease of use, in shaping technology adoption decisions. These results have practical implications for educators and institutions

seeking to enhance the integration of innovative technologies like ChatGPT in language education and professional development programmes.

## **6. Conclusion**

In conclusion, this study has successfully achieved its objectives by investigating the factors influencing the intention of EFL pre-service teachers in Oman to utilise ChatGPT for their professional development. The findings reveal compelling insights into the determinants of technology adoption in a non-Western cultural context. Contrary to perceived ease of use, the study highlights that pre-service teachers' perceptions of ChatGPT's usefulness for professional development play a more significant role in shaping their inclination to employ these resources. Furthermore, the introduction of additional variables into the technology acceptance model—namely, Instructor Support, Personal Innovativeness, and Learning Value—directly influences the mediating variables of the model, specifically perceived usefulness and ease of use. This research challenges the prevailing assumption that many TAM theories exhibit cultural and social biases favouring developed nations, emphasising the applicability of an extended TAM framework within a developing country context.

These limitations provide valuable guidance for future research endeavours. Firstly, it is advisable for future investigations to expand the research sample to encompass EFL pre-service teachers in various geographical locations, thereby enhancing the generalisability of the study's conclusions. Future research in this domain may benefit from adopting a longitudinal approach, given the dynamic and evolving nature of technology adoption. This approach becomes particularly relevant as users progressively acclimate to ChatGPT. By implementing a longitudinal strategy, researchers can explore novel determinants of usage and assess changes in their relative significance over time. Additionally, this approach can shed light on the evolving factors influencing adoption decisions.

Another avenue for investigation pertains to the influence of ChatGPT usage duration on users' intentions and behaviours. This research may entail examining potential disparities in users' perspectives, motivations and intentions regarding the adoption of ChatGPT, categorised by their level of experience, such as novice, intermediate and experienced users. Furthermore, future studies should encompass an evaluation of how inaccuracies in ChatGPT's responses impact the intentions of experienced users. Given the pivotal role that response accuracy plays in shaping the user experience, understanding how discrepancies affect user behaviour is crucial. Researchers can delve deeper into comprehending the intricate interplay between user convenience and the tolerance for errors, thereby elucidating the multifaceted elements that influence technology adoption and its sustained usage. In addition, an exploration of ChatGPT's adoption dynamics in educational contexts and broader applications can greatly benefit from this research trajectory. By investigating these aspects, researchers can gain valuable insights into the intricate processes governing the uptake of ChatGPT within diverse environments.

## 7. Limitations

However, it is essential to acknowledge the inherent limitations of this study. Firstly, the research scope is restricted to examining the factors influencing ChatGPT adoption among EFL pre-service teachers in Oman. Notably, several relevant variables, including motivation, social influence, experience and instructor's support, were deliberately omitted due to constraints related to time and financial resources. Furthermore, the study's findings are specific to the perceptions of EFL pre-service teachers at the university level in Oman. Generalising these results to encompass EFL students in pre-university settings or university students from diverse academic fields would be unwarranted due to the deliberately focused study design. Additionally, the study's participants were exclusively drawn from a single institution, Al-Ain University, located in the United Arab Emirates. Therefore, caution must be exercised when attempting to extrapolate the study's findings to all universities across the UAE.

## 8. Implications

The implications of this study span theoretical, methodological and practical domains. First, this study offers substantial theoretical contributions by extending the technology acceptance model to encompass three additional critical factors – namely, instructor support, personal innovativeness, and learning value. This augmentation significantly broadens the TAM's theoretical framework, focusing on the core constructs of perceived utility and ease of use. The extended TAM model, as unveiled through this research, not only effectively predicts the intention to adopt ChatGPT among Omani EFL pre-service teachers but also enriches our understanding of the nuanced decision-making processes underlying technology adoption in educational contexts. This empirical validation reinforces the significance of considering a multifaceted perspective when studying technology acceptance, transcending the conventional boundaries of the TAM.

Furthermore, this study engages in the theoretical exploration of cross-cultural validation, a dimension heretofore underrepresented in technology adoption research. While the TAM was initially validated in a Western cultural context, its applicability in non-Western settings, exemplified here in Oman, underscores the model's adaptability across diverse cultural landscapes. By establishing its relevance in a Middle Eastern society, this research advances the TAM's generalisability, emphasising the universality of technology acceptance constructs. This cross-cultural validation not only augments the model's theoretical robustness but also underscores the necessity of accounting for cultural factors when assessing technology adoption dynamics.

Additionally, the study's theoretical contributions extend to a critical examination of the TAM's foundational assumptions. By illuminating how instructor support, personal innovativeness and learning value act as antecedents to core TAM constructs (perceived ease of use, perceived usefulness and behavioural intent), this research challenges and enriches our understanding of the TAM's conceptual underpinnings. These additional variables collectively shape the intention to adopt ChatGPT tools among Omani EFL pre-service teachers, implying that technology acceptance is a multifaceted interplay of various dimensions.



Consequently, this nuanced perspective enhances the explanatory power of the TAM and elucidates the intricate factors influencing the acceptance of ChatGPT tools within an educational context.

Second, methodologically, this study makes a pivotal contribution by extending the TAM model to incorporate additional variables. This methodological innovation serves to enhance the model's comprehensiveness and utility for assessing technology acceptance. The inclusion of instructor support, personal innovativeness and learning value augments the model's capacity to capture the multifaceted nature of technology adoption, thereby providing a refined framework that can be applied to diverse educational settings.

Third, practically, this research holds significant implications for educational stakeholders and policymakers alike. By shedding light on the adoption of ChatGPT tools among Omani EFL pre-service teachers, this study raises awareness regarding the potential benefits of integrating AI-driven tools into traditional educational frameworks. Such integration has the potential to enhance the professional development of educators and enrich the teaching and learning experiences in Omani universities. Pre-service educators have the opportunity to leverage ChatGPT as a valuable tool for pedagogical support. It can aid in creating teaching materials, developing lesson plans and designing language-learning activities tailored to meet the needs of Omani students, considering their linguistic and cultural context.

This pioneering study contributes significantly to the theoretical, methodological and practical dimensions of technology acceptance research. The extension of the TAM model, cross-cultural validation and re-evaluation of its foundational assumptions offer a richer and more comprehensive understanding of technology adoption in the context of Omani EFL pre-service teachers. This research underscores the adaptability of technology acceptance models across cultural settings, reaffirms the importance of multifaceted perspectives in studying technology acceptance and advocates for the informed integration of AI tools in education. These contributions collectively advance the discourse on technology acceptance within non-Western cultural contexts, providing valuable insights for researchers, educators and policymakers. ChatGPT can be customised to produce content that is context-specific, integrating Omani cultural references and linguistic nuances. This customisation assists pre-service teachers in gaining a more profound understanding of using English in the local context, effectively addressing the challenges associated with cultural adaptation. ChatGPT can be configured to incorporate content that fosters cultural sensitivity and comprehension. This feature proves especially advantageous for pre-service teachers navigating interactions with students from diverse linguistic and cultural backgrounds. Pre-service educators can receive real-time feedback, enabling ongoing learning and the resolution of specific language challenges they might face. This immediate feedback mechanism supports continuous improvement in their language proficiency.

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## **Appendix 1: Questionnaire**

### **Intention to adopt ChatGPT:**

1. I intend to use ChatGPT to support my professional development in the future.
2. I will use ChatGPT for professional development in the near future.
3. I will use ChatGPT to help me achieve my professional development goals.
4. I am likely to use ChatGPT regularly for professional development.

### **Perceived usefulness:**

1. Using ChatGPT would allow me to accomplish learning tasks more quickly.
2. Using ChatGPT would improve my professional development.
3. Using ChatGPT would increase my productivity in professional development.
4. Using ChatGPT would enhance my effectiveness in professional development.
5. Using ChatGPT would make work easier.
6. I find ChatGPT useful in my professional development.

### **Ease of use of ChatGPT:**

1. ChatGPT is easy to use for my professional development.
2. I find it easy to navigate ChatGPT for professional development purposes.
3. It is easy to access professional development materials through ChatGPT
4. ChatGPT is a convenient tool for professional development.
5. ChatGPT is a straightforward tool for professional development.

### **Personal Innovativeness**

1. I like to experiment with new information technology
2. If I heard about a new information technology, I would look for ways to experiment with it.
3. I am usually the first to try out new information technology.

4. I enjoy exploring and adopting new information technologies even if they are not widely known.
5. When a new information technology is introduced, I am eager to be an early adopter and incorporate it into my professional development.

**Teachers' support:**

1. My lecturers encourage me to use ChatGPT for my professional development.
2. My lecturers provide guidance on integrating ChatGPT into my professional development.
3. My lecturers incorporate ChatGPT into their teaching practices to enhance my professional development.
4. My lecturers assist me in effectively utilising ChatGPT for my professional development.

**Learning Value:**

1. Using ChatGPT increases my knowledge and helps me to be successful in my profession.
2. ChatGPT is a very effective educational tool and helps me to improve my profession process.
3. ChatGPT saves my time in searching for materials.
4. ChatGPT helps me to achieve my learning goals.
5. I find ChatGPT to be a valuable resource for enhancing my professional knowledge and skills.