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| RESEARCH ARTICLE

AI-Powered Tools Adoption for Research Literature Review Writing: A Quantitative Gender Based Study among Moroccan EFL Doctoral Students

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| ABSTRACT
The integration of Artificial Intelligence (AI) in higher education academic research has attracted the attention of many researchers and scholars. However, studies that specifically explore the role of gender in AI-powered tools adoption in conducting research literature review are limited, especially in the non-Western and EFL contexts like Morocco. Drawing on the Technology Acceptance Model (TAM) and the modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT2), this cross-sectional quantitative study employed an online Likert-scale questionnaire to investigate the factors influencing AI-powered tools adoption in a literature review and the role of gender differences among Moroccan EFL doctoral students (N = 132) from 10 universities. The findings showed a high level of awareness and a high frequency of AI-powered tools use for literature review. More importantly, multiple regression analysis revealed that performance expectancy (PE), effort expectancy (EE), perceived ethics (PETH), social influence (SI), and hedonic motivation (HM) significantly influenced Moroccan students' behavioural intention (BI) to use these AI tools. Surprisingly, facilitating conditions (FC), AI self-efficacy (AISEF), and price value (PV) were insignificant predictors. Moreover, Independent t-tests indicated no statistically significant gender difference in all the examined factors, including behavioural intention and actual use (AU). These findings contribute to the growing discussion on AI integration in research writing, and provide implications for AI literacy training, ethical integration, and responsible use of AI in research practices.

| KEYWORDS
AI-Powered Tools, AI adoption, Doctoral Students, Gender Differences, Literature Reviews, UTAUT.

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1. Introduction

The integration of technological Tools Powered by Artificial Intelligence (AI-Powered Tools) in research writing has transformed the traditional methods according to the literature. A plethora of research studies explored the benefits, challenges, and ethical dilemmas of integrating such tools in academic research, along with the factors influencing the researcher's intentions to use these technologies in their research practices. However, research investigating the role of gender differences on AI-powered tools adoption in research, particularly in the phase of literature review, is limited, especially in EFL contexts, such as the Moroccan higher education. Moreover, the there is a lick of consensus in the existing literature about the impact of gender on AI adoption. While some studies find gender to be significant in shaping users' intentions and perceptions of AI adoption, other studies report no significant differences between gender.

This study, addresses a gap in the literature regarding the role of gender differences in AI powered tools adoption by exploring how the factors influencing AI tools adoption differ across gender. The study aims to provide insights of how the UTAUT2 constructs such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, perceived ethics, price value, behavioural intention, and actual use differ between male and female PhD students affiliated in the English department across Moroccan higher education institutions. By exploring the role of gender differences in the factors

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influencing AI tools adoption, the study contributes to the ongoing scholarly discussion and provides original cultural and context-specific findings of empirical research about the implementation of AI technologies in higher education and research. It also informs higher education policy makers about gender equity in AI adoption within the Moroccan higher education institutions.

Research objectives

The objectives of the study are:

1.To explore the state of AI-powered tools' adoption for literature review among EFL doctoral students in Morocco Higher education.

2.To examine the factors influencing Moroccan EFL doctoral students' adoption of AI-powered tools for research literature review.

3.To assess if the factors influencing Moroccan EFL doctoral students' adoption of AI-powered tools for research literature review vary across gender.

Research questions

The study seeks to answer the following questions:

1.What is the current state of AI-powered tools adoption for conducting research literature review among Moroccan EFL doctoral students?

2.To what extent do performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, perceived ethics, price value influence Moroccan EFL doctoral students' behavioural intention to use AI-powered tools in research literature review?

3.Are there gender-based differences in how these factors influence Moroccan EFL doctoral students' behavioural intention to use AI-powered tools?

To answer these research questions, this paper starts with reviewing existing research on the topic to form a general view of what has been said so far. Then, it explains the conceptual framework of the research and the research paradigm guiding the investigation. After that, it details the methodology adopted for participants' selection, research instrument development, data collection, preparation and analysis. Next, it interprets and discusses the findings in the light of the research questions and existing studies. Finally, it concludes with the research findings implications and the limitations of the research study.

2. Literature review

Artificial intelligence has revolutionized the research process. The traditional methods of conducting literature review are time and effort consuming. The manual identification, organization, analysis, summarization, and synthesis of existing research studies to find what has been said about a research topic is a daunting task. With the advances in artificial intelligence, the review process has become stress-free. Researchers nowadays use several applications and tools to facilitate this task. This section synthesizes the role of gender differences in the perceptions and adoption of these technologies as discussed in previous research.

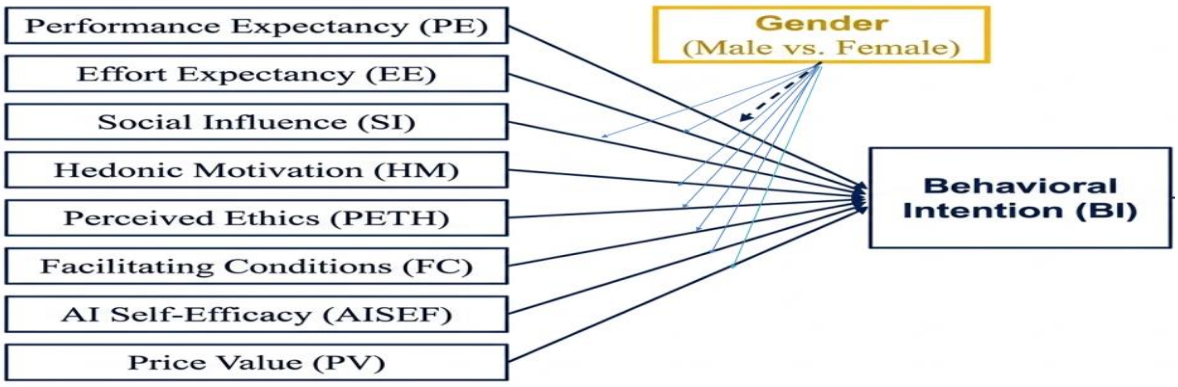
Studies have discussed the role of gender differences in AI tools adoption among users in different contexts and provided a diversity of findings (Lefievre, 2012). For example, Verma (2025) conducted a comparative study to investigate the impact of gender on the perceived advantages of ChatGPT in education among students majoring in the informatics discipline at E¨otv¨os Loránd University in Hungary. The research found a statistically significant difference between female students and male students, where females were more favourable and more agreeable of ChatGPT's advantage. While this study provided statistical evidence of gender differences, it lacks theoretical foundations. Besides, the study didn't specify which constructs are tested (ChatGPT Advantage). Conversely, Raman et al. (2024) combined two theoretical frameworks, mainly Diffusion of Innovation and Sentiment Analysis, to explore the difference between male and female students in priority of five constructs, including "ease of use", "observability", "trialability", "compatibility", and "relative advantage". The study, which recruited 228 students from three cities in India found a statistically significant difference in the favourability of the factors influencing the participants' behavioural intentions to use ChatGPT in higher education. While males prioritized "compatibility, ease of use, and observability," females prioritized "ease of use, compatibility, relative advantage, and trialability". Møgelvang et al. (2024) explored the impact of gender on generative artificial intelligence chatbots' adoption among a large sample (2692) of higher education students in Norway. The findings showed a statistically significant difference in engagement and interest between males and females. Males were more frequently engaged with and interested in AI chatbots adoption for tasks relevant to jobs, while females used them only for basic tasks related to texts and were vigilant about trust and critical thinking. These findings imply the importance of gender as a moderating variable in AI adoptions. Likewise, Emmanuel Mensah & Daniel (2023) and Yilmaz et al. (1996) found that gender plays a role in shaping students' intention to adopt GenAI in education. Aligning with Møgelvang et al. (2024), the study emphasised that males have a stronger level of intention to adopt GenAI. Similarly, Cho & Ofosu-anim (2025) found that male students show more interest in using GenAI than female students in higher education. The findings of this study align with those of Ali et al. (2023), where male students have more exposure and positive perceptions towards ChatGPT adoption than female students. In the same vain, Russo et al. (2025) found that gender differences are vital in AI adoption. The study underscored a statistically significant difference in constructs such as anxiety, attitudes, use, and perceived knowledge, where females showed more anxiety, lesser positive attitudes towards AI adoption, lesser use of this technology, and inferior perceived

knowledge than males. Ofosu-ampong (2023) also found that gender, among other factors, is a significant predictor of AI use in education. The study emphasised that male students are more likely to use AI tools in learning and research than female students. Recently, Matobobo (2026) conducted a systematic literature review to analyse gender differences in engagement, adoption, and use of AI tools in higher education. The thematic analysis of 30 articles published in Scopus, Web of Science, and ERIC during the last five years showed that male students use AI more frequently, have greater confidence and intention to adopt AI, and perceive it as career enhancing tool, while female students were more cautious about the risks and the ethical use of AI, emphasising their concerns about breaching ethical guidelines, danger to privacy, and negative impact on critical thinking. In contrast to the findings of the previously mentioned studies, other studies have found no gender differences in AI perceptions and adoption in education. For instance, Sergeeva et al. (2025) found no gender differences in the factors influencing the intention to adopt GAI in higher education. Similarly, Otoluwa et al. (2025) found that gender does not affect the perceptions of Indonesian students towards the impact of ChatGPT use on their research assignments' quality. Moreover, Iddrisu et al. (2025) found that gender difference does not influence undergraduate students' perceived effectiveness of AI tools in education, stressing that both males and females equally perceive AI tools as effective in enhancing academic writing.

3. Conceptual framework

This research is guided by two main theoretical models of technology adoption: Technology Acceptance Model (TAM) devised by Davis (1989) and the modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT 2) developed by Venkatesh, Thong, & Xu (2012). Based on the TAM framework, technology users' behavioural intention is generally predicted by the new technology's "perceived usefulness" and 'perceived ease of use" (Davis, 1989). The UTAUT2 framework on the other hand, expands the list of factors predicting technology acceptance and use. It posits that adoption is shaped by performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit (Venkatesh, Thong, & Xin Xu, 2012). In this research, habit was excluded from the list because AI-powered tools are relatively new in Moroccan higher education research practices and habit presupposes repeated use and routines. Instead, AI-powered tools self-efficacy and perceived ethics were included because in the context of academic research, doctoral students' confidence in their ability to AI-powered tools responsibly may influence their intention to them. Likewise, the inclusion of perceived ethics is relevant because the integration of AI in research has raised controversial debate about research integrity, transparency, bias, privacy, and responsible use. Based on the growing ethical debates of ethical use of AI in research, the doctoral students' ethical perceptions of AI implications in research is vital in shaping their behavioural intention to use AI-powered tools in their research literature review. Therefore, these factors are considered more relevant to predict behavioural intention in the context of educational research. Based on this argument, the research formulated eight null hypotheses:

- H01: There is no statistically significant difference between Moroccan EFL doctoral male and female students in perceived performance expectancy.
- H02: There is no statistically significant difference between Moroccan EFL doctoral male and female students in their perceived effort expectancy.
- H03: There is no statistically significant difference between Moroccan EFL doctoral male and female students in perceived social influence.
- H04: There is no statistically significant difference between Moroccan EFL doctoral male and female students in perceived facilitating conditions.
- H05: There is no statistically significant difference between Moroccan EFL doctoral male and female students in perceived hedonic motivation.
- H06: There is no statistically significant difference between Moroccan EFL doctoral male and female students in their perceived AI self-efficacy.
- H07: There is no statistically significant difference between Moroccan EFL doctoral male and female students in their perceived ethics.
- H08: There is no statistically significant difference between Moroccan EFL doctoral male and female students in their perceived price value.



4. Methodology

This section provides a detailed description of the methodology adopted in this study. It includes research design, participants, sampling techniques, data collection instrument and procedure, and data analysis techniques.

4.1 Research design

This research adopts a cross-sectional quantitative design based on a structured online 5-points Likert Scale questionnaire to investigate the factors influencing Moroccan EFL PhD students' behavioural intention to adopt AI-powered tools for conducting research literature review. This design is employed to examine the difference between males and females in the influence of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, perceived ethics, price value on Moroccan PhD students' behavioural intention to use them in research literature review.

4.2 Participants

The population targeted in this study consists of Moroccan EFL PhD students following their doctoral program in the English department from various Moroccan higher education institutions. Although the researcher targeted 400 respondents, only 132 participants, representing different age groups, PhD levels, gender, level of familiarity with AI-powered tools, and regions of Morocco, answered the questionnaire (a detailed description of the demographic data is provided in the data analysis section).

4.3 Sampling

The participants in this study were selected based on a convenience sampling method. Convenience sampling refers to sampling technique where the participants are recruited in the study because they are accessible, available, approximate, and willing to participate. (Etikan, 2016). This method insures homogeneous sample, though it does not guarantee generalisability of the findings.

4.4 Research instrument

The adopted a structured 5 Likert scale questionnaire to explore the perceived factors influencing Moroccan PhD students' adoption of AI-powered tools and to examine gender differences in the perceived factors influencing their intention to use them for research literature review. The questionnaire is adapted from earlier studies investigating AI in education (Acosta-Enriquez et al., 2024; Chao, 2019; Venkatesh, Thong, & Xin Xu, 2012; Wang et al., 2024) and modified to serve the research questions. It consists of 3 sections and 46 items. To check the validity of the questionnaire, it was sent to 2 experts in the field of technology integration in higher education, who suggested some amendments and the researcher made the necessary changes based on the experts' requirements. The final draft was piloted with a sample of 30 students of the same characteristics of the targeted population to improve its validity. The results of the pilot study were used to check the reliability and consistency of the items included in the instrument. Cronbach's Alpha test of validity was run, and the results showed a high level of consistency (,964).

4.5 Data analysis

Before running statistical analyses, the data was prepared and cleaned from outliers and missing values. In addition, necessary assumptions were checked to identify the appropriate inferential statistical tests to be used. This section provides a detailed account of the data analysis techniques performed in this study.

Assumptions check

Prior to final data analyses, essential assumptions were checked, such as normality of distribution of the data, which was tested using Skewness and Kurtosis analysis. The data was approximately normally distributed as the values of all the variables (PE, EE, SIF, MH, PETH, FC, AISEF, BI, AU) in both tests ranged between the threshold -1and +1, with an exception of one variable (PV) which slightly deviated from the threshold value in the Kurtosis (1.262). Assumption checks also indicated no major violations of linearity, and homoscedasticity. This allows for statistical parametric tests, such as regression analysis and independent samples t-tests.

Descriptive statistics were performed to analyse demographic data such as age, gender, affiliation, level, familiarity with AI tools, frequency of use, and types of AI tools use. Inferential statistics such as regression analysis was used to test the hypotheses regarding the factors influencing AI tools adoption across genders. Regression analysis is relevant to research investigating factors influencing AI adoption. For example, Davis (1989), the founder of the TAM, used regression analysis to examine the

relationship between perceived usefulness and perceived ease of use and behavioural intention. Biloš & Budimir (2024) employed linear regression to examine the relationship between UTAUT2 constructs, such as effort expectancy, performance expectancy, facilitating conditions, social influence, hedonic motivation, habit, price value and personal innovativeness and behavioural intention to use ChatGPT. Further inferential statistics includes Independent Samples t-tests to examine gender differences in the factors influencing AI adoption.

5. Results

5.1 Descriptive statistics

Demographic data

This section provides a description of the demographic data of participants in this study. A total of 132 participations were consider for final analysis after removing the missing values, and checking incomplete answers. The participants belong to three different age groups with 69 students belonging to 25-34 age group representing 52.3% of the sample, 56 students belong to 35-44 age group representing 42.4%, and 7 students belong to 45-54 age group representing 5.3%. 56.1% of the participants were male students (N:74), and 43,9% of the participants were female students (N:58). In terms of affiliation, the study recruited participants from 10 universities in different regions of Morocco: the majority of the participants are affiliated in Moulay Isamail University (N:23), followed by Sidi Mohamed Ben Abdellah and Sultan Moulay Slimane (N22 each), Cadi Ayyad University (N:18), Mohamed the 1st Oujda (N:16), FSH Ibn Tofail (N:10), 6 participants from Hassan 2nd, Ibn Zohr University, and University Mohamed 5, and FLSH Sais (N:3). As to the educational level, four levels of PhD program were represented in this study. 18,2% were from first year (N:24), 31,8% from second year (N:42), 26,5% from third year (N:35), and 23,5% from the fourth year or above (N:31).

Familiarity with AI-tools

The following graph shows that level of familiarity of the participants with AI-tools. Most of the participants (44,7%) said they are familiar with AI-tools, 31,8% are somewhat familiar, 15,9% are very familiar, 4.,5% are unfamiliar, and only 3% said that they are very unfamiliar with AI tools used for literature review.

Familiarity with AI tools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	familiar	59	44,7	44,7	44,7
	Somewhat familiar	42	31,8	31,8	76,5
	unfamiliar	6	4,5	4,5	81,1
	very unfamiliar	4	3,0	3,0	84,1
	very familiar	21	15,9	15,9	100,0
	Total	132	100,0	100,0	

Frequency of use

The results show that the majority of the participants (52.3%) use AI-powered tools frequently at a daily basis. 21.2% use them occasionally, two to three times a month, 21.4% use them very frequently, 9.1 use them rarely, and no participant states that they never use them. This means that AI-powered tools are being used by PhD students in different levels.

Frequency of AI tools usage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Frequently (weekly)	69	52,3	52,3	52,3
	Occasionally (2-3 times a month)	28	21,2	21,2	73,5
	Rarely (once a month or less)	12	9,1	9,1	82,6
	Very Frequently (daily)	23	17,4	17,4	100,0
	Total	132	100,0	100,0	

AI-powered tools used by PhD students for reviewing the literature

The results revealed that the participants are using multiple AI-powered tools for literature review. As dipected in figure 2 below, the most reported tool was ChatGPT. 34.1% of the participants acknowledged that they use ChatGPT for reviewing the literature. Followed by a combination of ChatGPT and Semantic Scholar (9.1 %). Although the participants acknowledged the use of other AI-tools for literature review, most of them included ChatGPT among other tools, such as Semantic Scholar, Elicit, Scite, Research Rabbit, Consensus, DeepSeek, Litmap, Aithor, Gemini, Jeni ai, System Pro, Inciteful … only a few students (2) said that they do not use AI to review the literature, but they use it refine sections of their literature review and summarize articles. This reflects the popularity of ChatGPT among Moroccan PhD students as a useful tool in writing research literature review.

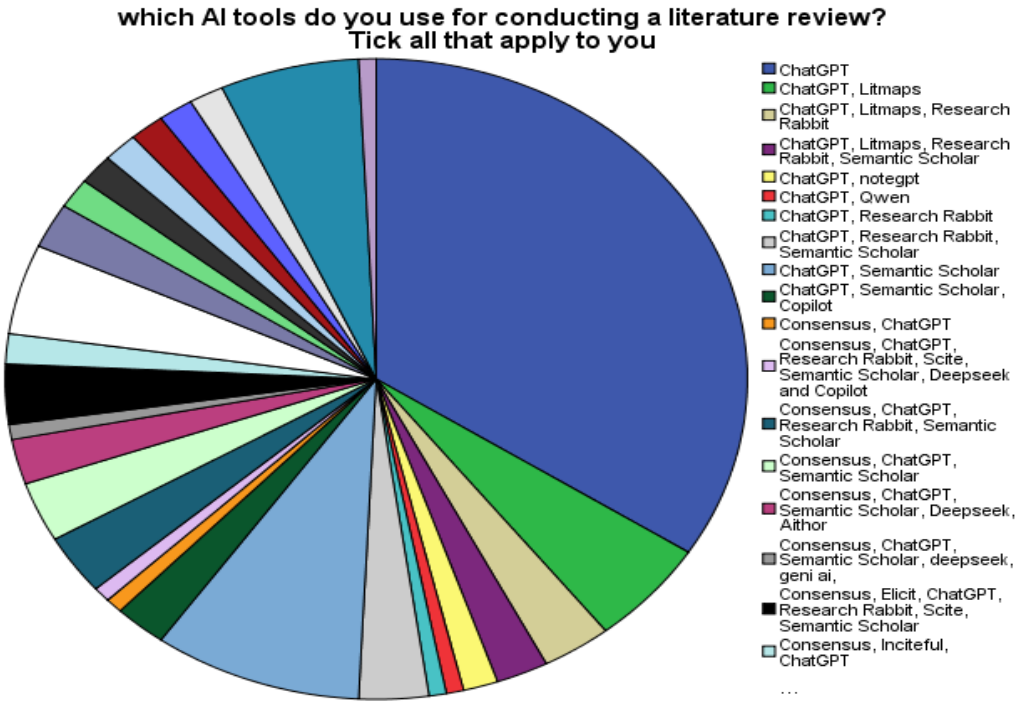


Figure 2: AI-powered tools used for literature review

Factors influencing behavioural intention to use AI-powered tools.

Multiple linear regression analysis

The table below shows the impact of the PE, EE, SI, HM, PETH, FC, AISEF, and PV on the outcome variable BI. The results show that five independent variables have statistically significant impact on the dependent variable. Performance expectancy (PE) has a strong positive effect on behavioural intention (BI) (B = 0.294, β = 0.244, p < 0.001). Similarly, effort expectancy (EE) has a significant positive effect on behavioural intention (B = 0.222, β = 0.197, p < 0.022). Social influence (SI) has a significant positive effect on BI (B = 0.219, β = 0.180, p < 0.002). Hedonic motivation (HM) has strong significant positive effect on BI (B = 0.440, β = 0.417, p < 0.000). Perceived ethics (PETH) has a strong significant positive effect on BI (B = 0.438, β = 0.322, p < 0.000). These findings indicate that high performance, effort expectancy, social influence, hedonic motivation, and perceived ethics are directly associated with high behavioural intention.

In contrast, facilitating conditions (FC), AI self-efficacy (AISEF), and price value (PV) do not have a significant effect on BI. FC (B = -0.159, β = -0.112, p < 0.059), AISEF (B = -0.105, β = -0.088, p < 0.287), and PV (B = -0.105, β = -0.093, p < 0.169).

In sum, in this study HM is the strongest predictor of BI, followed by PETH, PE, EE, and SI. While FC, AISEF, and PV are non-significant predictors of BI.

Coefficientsa

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-,704	,320		-2,202	,030
	PE	,294	,075	,244	3,932	,000
	EE	,222	,096	,197	2,314	,022
	SI	,219	,068	,180	3,233	,002

HM	,440	,070	,417	6,302	,000
PETH	,438	,095	,322	4,621	,000
FC	-,159	,083	-,112	-1,902	,059
AISEF	-,105	,098	-,088	-1,070	,287
PV	-,105	,076	-,093	-1,384	,169

a. Dependent Variable: BI

Gender difference

The table below shows the detailed results of the independent samples t-test. The Levene's Test for Equality of Variances was not significant in all variables except for PE, where the second line was used to interpret the data. The results indicated no statistically significant difference between males and females in all the tested factors (PE, EE, SI, PETH, FC, AISEF, BI, PV, HM, and AU). The following paragraphs explain the results in more detail.

Performance expectancy PE, t(103) = 0.40, p = .687; effort expectancy EE, t(130) = 1,13, p = .259; Social influence SIF, t(130) = −0.64, p = .525; hedonic motivation HM, t(130) = 1.83, p = .069; perceived ethics PETH, t(130) = −0.32, p = .750; facilitating conditions FC, t(130) = 0.34, p = .733; AI self-efficacy AISEF, t(130) = 0.04, p = .969; BI, t(130) = 1.55, p = .124; PV, t(130) = 0.90, p = .371; and AU, t(130) = −0.04, p = .968.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
						Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df				Lower	Upper
PE	Equal variances assumed	9,934	,002	,418	130	,677	,05487	,13130	-,20489	,31463
	Equal variances not assumed			,404	103,367	,687	,05487	,13574	-,21432	,32406
EE	Equal variances assumed	,483	,488	1,133	130	,259	,15843	,13978	-,11810	,43497
	Equal variances not assumed			1,118	115,129	,266	,15843	,14177	-,12238	,43925
SI	Equal variances assumed	,066	,797	-,638	130	,525	-,08279	,12977	-,33952	,17394
	Equal variances not assumed			-,630	115,851	,530	-,08279	,13145	-,34314	,17756
HM	Equal variances assumed	1,636	,203	1,833	130	,069	,271	,148	-,022	,564
	Equal variances not assumed			1,867	128,848	,064	,271	,145	-,016	,559
PETH	Equal variances assumed	,527	,469	-,320	130	,750	-,037	,116	-,267	,193
	Equal variances not assumed			-,320	123,550	,749	-,037	,116	-,267	,192
FC	Equal variances assumed	2,435	,121	,342	130	,733	,038	,111	-,182	,257
	Equal variances not assumed			,334	109,405	,739	,038	,114	-,187	,263
AISEF	Equal variances assumed	3,178	,077	,040	130	,969	,00524	,13259	-,25707	,26755
	Equal variances not assumed			,039	110,255	,969	,00524	,13557	-,26342	,27391
BI	Equal variances assumed	,149	,700	1,548	130	,124	,242	,156	-,067	,552
	Equal variances not assumed			1,549	122,763	,124	,242	,156	-,067	,552
PV	Equal variances assumed	3,628	,059	,898	130	,371	,126	,140	-,151	,402
	Equal variances not assumed			,864	99,873	,390	,126	,145	-,163	,414
AU	Equal variances assumed	3,424	,067	-,040	130	,968	-,006	,158	-,318	,306
	Equal variances not assumed			-,039	107,630	,969	-,006	,162	-,327	,315

Discussion

This study sought to examine the factors influencing AI-powered tools' adoption for literature review and whether these perceived factors differ across gender. To answer the research questions, the results of regression analysis showed that PE, EE, SI, HM, PETH, positively influence Moroccan students' behavioural intention to use AI-powered tools in their research literature review. However, FC, AISEF, and PV had no influence on students' behavioural intentions to use these tools in literature review. In regards to the first research question, the findings of this study suggest that Moroccan PhD students are more likely to use AI-powered tools when they perceive them as productive in improving their research literature review, user friendly, socially

acceptable and advisable, more enjoyable, and aligning with ethical guidelines and recommendations. The insignificance of facilitating conditions (FC), AI tools self-efficacy (AISEF), and price value (PV) may indicate that Moroccan students tend to prioritize the tools usefulness, easiness, social acceptance, and adherence to ethical guidelines to resource availability, skills required, and monitory cost of the AI tools. It also may indicate that students are sufficiently equipped with the necessary AI-tools, such as the free versions, and the skills required to use them. Therefore, although these factors reported as significant predictors of behavioural intentions in previous research, this may not be generalized in all the contexts, particularly in Moroccan higher education.

As to the second research question, the results showed that although Moroccan PhD students perceived PE, EE, SI, HM, PETH as significant predictors and FC, AISEF, and PV as non-significant predictors of their behavioural intention to use AI-powered tools in research literature review, the results of the independent samples t-test showed no statistically significant gender differences in the perceived influence of all the examined constructs (PE, EE, SI, HM, PETH, FC, AISEF, and PV) on their behavioural intentions. This indicates that both males and females share similar perceptions of the factors influencing their behavioural intention to use AI-powered tools for literature review. These findings align with Iddrisu et al. (2025), Otoluwa et al. (2025), and Sergeeva et al. (2025) where the role of gender was insignificant in determining AI adoption.

Implications of the findings

The findings of this study have several important practical and theoretical implications. First, AI is deeply embedded in research Moroccan doctoral daily research practices. Second, Moroccan higher education institutions do not need to design gender specific training programs for the integration of AI in higher education research. Third, these institutions should focus on improving AI accessibility, promoting AI usefulness, and preparing well equipped infrastructure for the integration of AI in academic research. Fourth, the insignificant gender difference in the perceived ethics, self-efficacy, and price value implies that policy makers and curriculum designers should work on providing unified strategies of AI integration in higher education research, such as AI literacy, ethical guidelines, and gender equity in the integration of AI in research. Finally, the findings contribute to theory building. The non-significance of gender differences in this study supports the growing argument that the moderating role of gender in AI adoption is context specific. This means that the moderating role of gender differences, which is proved to be insignificant in recent studies, may be diminished in higher education context where students are highly educated and more digitally literate. Thus, the findings suggest reconsidering the Unified Theory of Acceptance and Use of Technology assumption about the moderating role of gender difference in technology adoption and use.

Conclusion

The present study set out to explore the factors influencing intentions to use AI-powered tools for literature review among Moroccan PhD students in English department at various higher education institution. It also sought to examine gender differences in the perceptions of the factors' influencing AI adoption for literature review. The study adopted a quantitative cross-sectional design employing a 5 point Likert scale validated in previous studies and adapted to serve the research questions. Statistical tests were employed using SPSS to identify the significance or insignificance of the UTAUT constructs in predicting students' intentions to use AI-powered tools in their literature review and how these constructs differ across gender. Regarding the first research question, the findings showed that Moroccan PhD students' intentions to use AI-powered tools is determined by five factors which were significant. These factors include performance expectancy, effort expectancy, social influence, hedonic motivation, and perceived ethics. On the other hand, facilitating conditions, AI self-efficacy, and hedonic motivation were not significant in predicting the participants' intentions to use such tools.

Addressing the second research question, the findings of this study also highlighted that no gender differences in the perceptions of factors influencing the participants' intention to use AI-powered tools in literature review. No statistically significant difference was found in all the examined constructs (PE, EE, SI, HM, PETH, FC, AISEF, and PV). Both male and female PhD students perceived the factors influencing their intentions to adopt AI-powered tools in similar ways.

Limitations

This study has several limitations that should be taken into considerations. First, the self-reported data may not be objective and may provide biased responses. Second, the sample size may not be sufficient for generalizing the findings of the study. Third, the study did not take into account complex relationships among the variables, as its primary focus was to examine the direct relationships between behavioural intention (BI) and its predictors (PE, EE, SI, HM, PETH, FC, AISEF, and PV); and how males and females perceive these relationships. Also, the study was conducted in a short period of time, which may not capture perception change across time. Therefore, the findings should be cautiously interpreted in the light of these limitations.

Future research directions

Future research needs to employ different methods, such as mixed-methods, qualitative methods, and experimental research design to triangulate the self-reported finding, reduce bias, and gain deeper understanding of PhD students' attitudes, experiences, and challenges regarding the use of AI in research. Future studies are also required to conduct longitudinal research to investigate the evolvement of perceptions towards AI tools adoption in research through the time. Replication of this study

across discipline, regions, cultural contexts nationally and internationally, is highly required. Furthermore, future research should investigate indirect relationships between the examined factors.

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References

[1] Acosta-Enriquez, B. G., Ramos Farroñan, E. V., Villena Zapata, L. I., Mogollon Garcia, F. S., Rabanal-León, H. C., Angaspilco, J. E. M., & Bocanegra, J. C. S. (2024). Acceptance of artificial intelligence in university contexts: A conceptual analysis based on UTAUT2 theory. Heliyon, 10(19). https://doi.org/10.1016/j.heliyon.2024.e38315
[2] Ali, H., Ali, D., Fatemi, Y., & Rose, S. E. (2025). ChatGPT perceptions, experiences, and uses with emphasis on academia. Front. Educ, 10(1559509).
[3] Biloš, A., & Budimir, B. (2024). Understanding the Adoption Dynamics of ChatGPT among Generation Z: Insights from a Modified UTAUT2 Model. Journal of Theoretical and Applied Electronic Commerce Research, 19(2), 863–879. https://doi.org/10.3390/jtaer19020045
[4] Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in Psychology, 10(JULY), 1–14. https://doi.org/10.3389/fpsyg.2019.01652
[5] Cho, C., & Ofosu-anim, D. (2025). Exploring international students' perceptions of adopting generative artificial intelligence (GenAI) technologies in learning. Social Sciences & Humanities Open, 11(January), 101418. https://doi.org/10.1016/j.ssaho.2025.101418
[6] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly: Management Information Systems, 13(3), 319–339. https://doi.org/10.2307/249008
[7] Emmanuel Mensah, B., & Daniel, B.-K. (2023). From the Consumers' Side: Determining Students' Perception and Intention to Use ChatGPT in Ghanaian Higher Education. JOURNAL OF EDUCATION SOCIETY & MULTICULTURALISM, 1–29. https://doi.org/https://doi.org/10.2478/jesm-2023-0001 From
[8] Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11
[9] Iddrisu, H. M., Iddrisu, S. A., & Aminu, B. (2025). Gender Differences in the Adoption, Usage, and Perceived Effectiveness of AI Writing Tools: A Study Among University for Development Studies Students. 4(1), 100–111. https://doi.org/https://doi.org/10.31949/ijeir.v4i1.11717
[10] Lefievre, V. (2012). Gender Differences in Acceptance by Students of Training Software for Office Tools. ATINER's Conference Paper Series, 1–13.
[11] Matobobo, C. (2026). A systematic review of gender differences in students' use of AI tools for learning in higher education. Discover Education, 1618. https://doi.org/https://doi.org/10.1007/s44217-026-01116-6
[12] Møgelvang, A., Bjelland, C., & Grassini, S. (2024). Gender Differences in the Use of Generative Artificial Intelligence Chatbots in Higher Education: Characteristics and Consequences. Educational Sciences, 14(1363), 1–19. https://doi.org/https://doi.org/10.3390/educsci14121363
[13] Ofosu-ampong, K. (2023). Gender Differences in Perception of Artificial Intelligence- Based Tools. Journal of Digital Art & Humanities, 7–11.
[14] Otoluwa, M. H., Salim, A., Saud, I. W., Darise, G. N., & Asma, A. (2025). Students' perceptions and effect of ChatGPT on research proposal quality across gender in Indonesia. 14(5), 3613–3623. https://doi.org/10.11591/ijai.v14.i5.pp3613-3623
[15] Raman, R., Mandal, S., Das, P., Kaur, T., & Sanjanasri, J. P. (2024). Exploring University Students' Adoption of ChatGPT Using the Diffusion of Innovation Theory and Sentiment Analysis with Gender Dimension. Human Behavior and Emerging Technologies, 2024(November 2022), 21. https://doi.org/10.1155/2024/3085910
[16] Russo, C., Romano, L., Clemente, D., Iacovone, L., Gladwin, T. E., & Panno, A. (2025). Gender differences in artificial intelligence : the role of artificial intelligence anxiety. Frontiers in Psychology, 16.
[17] Sergeeva, O. V., Zheltukhina, M. R., Shoustikova, T., Tukhvatullina, L. R., Dobrokhotov, D. A., & Kondrashev, S. V. (2025). Understanding higher education students' adoption of generative AI technologies: An empirical investigation using UTAUT2. Contemporary Educational Technology, 17(2). https://doi.org/10.30935/cedtech/16039
[18] Venkatesh, V., Thong, J. Y. L., & Xin Xu. (2012). CONSUMER ACCEPTANCE AND USE OF INFORMATION TECHNOLOGY: EXTENDING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY1. MIS Quarterly, 36(1), 157–178.
[19] Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory (UTAUT2). Forthcoming in MIS Quarterly, 36(1), 157–178. https://ssrn.com/abstract=2002388
[20] Verma, C. (2025). Analyzing Gender Dynamics in ChatGPT Advantage:An Automated Real-Time Dashboard. Procedia Computer Science, 259, 1728–1736. https://doi.org/10.1016/j.procs.2025.04.128
[21] Wang, C., Wang, H., Li, Y., Dai, J., Gu, X., & Yu, T. (2024). Factors Influencing University Students' Behavioral Intention to Use Generative Artificial Intelligence: Integrating the Theory of Planned Behavior and AI Literacy. International Journal of Human-Computer Interaction, 0(0), 1–23. https://doi.org/10.1080/10447318.2024.2383033
[22] Yilmaz, H., Maxutov, S., Baitekov, A., & Balta, N. (1996). Student' s Perception of Chat GPT: A Technology Acceptance Model Study. International Educational Review. https://doi.org/https://doi.org/10.58693/ier.114