



Original article

AI and Time-Saving in Academic Writing Tasks: A Small-Scale Study of Undergraduate EFL Students

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ABSTRACT

This study is investigating the factors influencing fourth-grade students' intention and use of (Students in university) is the goal of this study. The Technology Acceptance Model (TAM), which suggests that perceived usefulness and perceived ease of use are the primary factors influencing consumers' adoption of technology, served as the theoretical foundation for the data of the study analysis. A series of statements intended to gauge the primary variables of the model reported usefulness, attitude toward usage, perceived ease of use, and actual use are Google Forms included in the questionnaire. The study concluded that the TAM model is a suitable framework for understanding and explaining the behavior of fourth-grade students towards technology, and recommends the necessity to enhance their digital learning experience.

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Keywords: Technology Acceptance Model (TAM), questionnaire, educational technology

الذكاء الاصطناعي وتوفير الوقت في مهام الكتابة الأكاديمية: دراسة صغيرة النطاق على طلاب البكالوريوس دارسي اللغة الإنجليزية ك لغة أجنبية

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المستخلص

الغرض من هذه الدراسة هو دراسة التأثيرات التي تحدد هدف طلاب السنة الرابعة الجامعية في تبني التكنولوجيا واستخدامهم الفعلي للتكنولوجيا. ستستند التحليلات إلى نموذج قبول التكنولوجيا (TAM)، الذي يفترض أن الفائدة المتصورة وقابلية الاستخدام المتصورة هما المتغيران الأكثر أهمية للذان يشكلان الموقف ويؤديان إلى تبني الأفراد للأنظمة التكنولوجية. لتحقيق أهداف البحث، تم اختيار عينة من خمسين طالبًا وطالبة في السنة الرابعة. الأداة البحثية الأساسية هي الاستبيان الذي تم إدارته إلكترونياً والذي استخدم لجمع البيانات. وتشير النتائج إلى أن نموذج TAM يمكن استخدامه كنموذج مناسب لتفسير وشرح الاتجاهات السلوكية للطلاب فيما يتعلق بتبني التكنولوجيا. وتقدم النتائج معلومات مفيدة يمكن استخدامها لتحسين مستوى التعليم عبر الإنترنت والمساهمة في التطوير النظري والعملية لتكنولوجيا التعليم

الكلمات المفتاحية: نموذج قبول التكنولوجيا (TAM)، استبيان، التكنولوجيا التعليمية، أدوات التعليم الذكي.

1. Introduction

Information and communication technology has advanced quickly in the modern period, making its integration into the educational process imperative to meet contemporary needs and enhance learning results (Selwyn, 2011). In addition to offering a variety of tools and platforms targeted at improving engagement and enriching educational material, technology has brought about a qualitative shift in traditional teaching approaches (UNESCO, 2015). However, the human element represented by students' acceptance and actual use of these technologies remains the primary driver of their success or failure, thus just offering these technologies does not ensure the fulfillment of the desired aims (Venkatesh et al., 2003).

Organizations have long a significant hurdle when consumers refuse to use existing technology systems, particularly in the educational sector (Legris et al., 2003). If the target population does not use information systems, they cannot increase the effectiveness of the educational process or improve institutional performance (Davis, 1989). "Computer systems cannot improve institutional performance if they are not used" (Szajna, 1996, p. 86) is the essential assertion that gave rise to this idea. Therefore, it became necessary to create theoretical models that would aid in comprehending, elucidating, and forecasting the elements that influence people's decisions to embrace or reject information technology (Ajzen & Fishbein, 1980).

In the realm of technology user acceptability research, the Technology Acceptability Model (TAM) is regarded as one of the most well-known and established models (Lee et al., 2003). Fred Davis first created this model in his PhD dissertation in 1985, and his groundbreaking study in 1989 published it (Davis, 1986; Davis, 1989). The two primary variables of the model, "Perceived Usefulness," which is defined as "the degree to which a person believes that using a particular system would enhance their job performance" (Davis, 1989, p. 320), and "Perceived Ease of Use," which is defined as "the degree to which a person believes that using a particular system would

enhance their job performance," are the foundation of the Theory of Reasoned Action (Fishbein & Ajzen, 1975). As stated by Davis (1989, p. 320), Perceived Ease of Use is "the degree to which a person believes that using a particular system would be free of effort and difficulty."

The TAM model has been the foundation for numerous studies in a variety of fields, particularly educational technology, as numerous empirical studies over the years have shown its efficacy as a useful tool for forecasting users' intentions to use information systems (Scherer et al., 2019; King & He, 2006). Understanding students' acceptance of these technologies has become crucial due to the growing usage of AI writing tools like ChatGPT, Grammarly, and other generative AI apps in higher education (Cotton et al., 2023; Kasneci et al., 2023). As a result, this study uses the Technology Acceptance Model (TAM) to examine how undergraduate EFL students see the value and usability of AI writing tools, especially with regard to time savings on academic writing assignments (Davis, 1989; Venkatesh et al., 2003).

Therefore, this study starts as a methodological step toward a more thorough comprehension of the behavioral and psychological elements influencing fourth-grade children's interactions with instructional technology. By using the Technology Acceptance Model (TAM) as a thorough theoretical framework, the study intends to bridge the gap between theoretical knowledge and real-world application. To do this, an electronic questionnaire is created and given to a sample of students in order to gauge how easy and useful they believe [technology] to be, as well as how much these opinions affect their attitudes and intention to actually use it.

Although there are studies that have addressed the acceptance of technology in education, and others that have discussed the use of ChatGPT and AI tools, the number of studies that have directly investigated the role of AI-powered writing tools in saving time during academic writing tasks for English language students remains limited, especially in the educational setting where this study is conducted.

Through this study, the researcher hopes to make a qualitative contribution to the Arabic library in the field of educational technology, and to produce results and recommendations that are applicable, helping teachers and those responsible for the educational process in designing more effective and engaging digital learning experiences that align with students' aspirations and cognitive needs in the digital age. The study also aims to open new horizons for researchers to explore other variables that may contribute to enhancing our understanding of user behavior in various educational contexts.

This study seeks to answer the following research questions:

1. How aware are English language students of the benefits of AI-powered writing tools?
2. How easy do they find these tools to use?
3. Do these tools help reduce the time required to complete academic writing tasks?

Additionally, this study proposes the following hypotheses:

1. Perceived usefulness has a positive effect on students' intention to use AI writing tools.
2. Perceived ease of use has a positive effect on students' intention to use AI writing tools.
3. Perceived ease of use has a positive effect on perceived usefulness.

4. AI writing tools contribute significantly to perceived time-saving in academic writing tasks among EFL students.

2. Literature Review

This chapter addresses the theoretical aspect of the study, reviewing the Technology Acceptance Model (TAM) as the main theoretical framework, introducing its key variables, and explaining the relationships between them. The aim of this chapter is to build a solid theoretical foundation that helps in interpreting the relationships between the study's variables and formulating its hypotheses.

a. Educational Technology

Educational technology is defined as "an integrated process that relies on applying scientific theories in the field of education and learning, aimed at designing, implementing, and evaluating educational situations, and optimally using human and non-human elements in order to achieve specific educational objectives" (Al-Khawalda, 2019, p. 25). Traditional teaching techniques have undergone a qualitative change as a result of technology, which offers a variety of tools and platforms intended to improve engagement and enrich instructional material (Garrison & Vaughan, 2008). E-learning platforms, educational apps, virtual reality, instructional games, and other resources to enhance the quality of the educational process are examples of modern educational technology (Roblyer & Hughes, 2019).

Students' acceptance of these technologies and readiness to incorporate them into their regular learning activities are key factors in determining how well they work in the classroom. It is crucial to comprehend the elements that influence students' acceptance or rejection of technology, since merely offering it does not ensure its real use (Venkatesh et al., 2003).

2.2 Use of AI by EFL Students

Research has demonstrated that artificial intelligence systems offer significant linguistic help for EFL learners, especially when it comes to enhancing vocabulary, grammar, and concept organization. Additionally, students have stated that these resources have improved their comprehension of the demands of academic writing. A study of students' views and adoption of these tools within a clear theoretical framework is necessary, nevertheless, as some research indicates that unstructured usage may impede the development of autonomous writing abilities (Kasneci et al., 2023).

According to Davis (1989), "the frequency and duration of an individual's actual use of technology" is the dependent variable in the model. It is quantified by:

- How many times a week?
- Length of time spent using each session.
- Degree of dependence on technology to finish schoolwork.
- Many applications of technology.

The ultimate objective of educational institutions' technology provision is actual usage, which is the result of the factors mentioned above.

2.3 Technology Acceptance Model

In the subject of user acceptance of technology research, the Technology Acceptance Model (TAM) is regarded as one of the most well-known and established models. Fred Davis first created this model in his Phd dissertation in 1985, and his groundbreaking study in 1989 published it (Davis, 1986; Davis, 1989). It is created specially to focus on computer technology and information systems (Davis et al., 1989).

The TAM model aims to explain and predict users' behavior toward technology by identifying the key variables that influence an individual's decision to accept or reject the use of a particular technological system. This model is characterized by its simplicity and explanatory power, which has made it the most widely used in information technology research over the past decades.

2.4. The Technology Acceptance Model's (TAM) Variables

The five primary variables that make up the TAM model are related by certain causal linkages, specifically:

1. Perceived Usefulness

"The degree to which an individual believes that using a particular system will enhance their performance and increase their efficiency" is the definition of perceived usefulness (Davis, 1989, p. 320). In the context of education, it describes how much a student thinks that utilizing technology would benefit them:

First; better understanding of study materials.

Second; completing academic tasks more efficiently.

Third; improving overall academic achievement.

Fourth; saving time and effort in doing assignments.

The more a student believes in the benefits of technology, the more likely they are to accept it and actually use it. This variable is considered one of the strongest predictors of technology acceptance in most studies.

2. 5. Perceived Ease of Use

"The degree to which an individual believes that using a particular system will be effortless and easy" is the definition of perceived ease of use (Davis, 1989, p. 320). It emphasizes the following:

First; the technology's ease of learning.

Second; interaction with the system is clear.

Third; the technology's ease of learning.

Fourth; freedom in terms of complexity and usage difficulties.

Students' views about technology are positively impacted by its ease of use, since it requires less effort to understand and increases their confidence in their ability to utilize it. Perceived utility is also directly impacted by ease of use; students are more likely to believe that a technology is beneficial if it is simple to use (Davis, 1989).

2.6. Attitude Regarding Utilization (ATU)

A person's favorable or negative attitudes on the usage of technology are referred to as their attitude to use (Davis, 1989). The following factors directly affect this variable: Utility perceived and perceived ease of use.

Students will have a more favorable attitude toward utilizing technology if they believe it to be helpful and simple to use. According to Fishbein and Ajzen (1975), attitudes serve as a mediator between behavioral intentions and views about usefulness and simplicity of use. Affective components of attitude include:

First; thinking that employing technology is a smart idea.

Second; utilizing technology with contentment and joy.

Third; a generally favorable assessment of technology.

3. Methodology

3.1 Research Design

The views of English as a foreign language (EFL) learners about the use of artificial intelligence (AI) technologies in academic writing are investigated in this study utilizing a quantitative descriptive design. According to the TAM model, this approach is selected since it is appropriate for gathering information through questionnaires and statistically evaluating it to ascertain students' adoption of AI technologies.

Students' opinions on AI writing tools are investigated by analyzing the data using descriptive statistical methods, such as frequencies, percentages, and mean scores. The three primary components of the Technology Acceptance Model (TAM)—perceived utility, perceived ease of use, and behavioral intention—are the focus of the investigation. These assessments are used to find broad patterns in students' opinions about the application of AI techniques to academic writing assignments.

3.2 Participants

The study sample consisted of 50 fourth-year undergraduate students in the English department, selected using the convenience sampling method due to their accessibility. The sample included both genders, and consideration is given to the diversity of academic levels among the students to ensure good representation.

3.3 Data Collection

An online questionnaire consisting of 15 questions, categorized according to the TAM elements, is used:

Perceived Usefulness: 7 questions

Perceived Ease of Use: 7 questions

Behavioral Intention: 6 questions

The questionnaire employed a 5-point Likert scale (1 = Strongly Agree, 5 = Strongly Disagree) to accurately measure students' attitudes.

3.4 Procedure

The questionnaire is distributed electronically via Google Forms to all participants. Data is collected over a two-week period to ensure the widest possible response time. The purpose of the study is explained to participants, and the confidentiality of the data is emphasized; it would only be used for academic research purposes.

Additionally, Fourth-year EFL students received the questionnaire electronically via online platforms. The goal of the study is explained to the participants, and their answers are gathered in an anonymous manner. After that, the completed surveys are arranged and ready for statistical analysis.

The questionnaire is examined by experts in educational technology and English language instruction to guarantee content validity. Before sending the final version of the questionnaire, their feedback and recommendations are taken into account and the appropriate changes are made. The questionnaire is designed based on the Technology Acceptance Model (TAM) and previous studies on the use of artificial intelligence tools in education and academic writing. It comprised 20 items distributed across four main dimensions: perceived usefulness, perceived ease of use, behavioral intention, and time-saving. The questionnaire items are reviewed to ensure their suitability for the study's objectives and their clarity for participants.

To verify the reliability of the questionnaire, Cronbach's Alpha coefficient is calculated using the participant data. The results showed a reliability coefficient of 0.864, indicating a good level of internal consistency among the questionnaire items, thus demonstrating that the instrument possesses a suitable degree of reliability and can be used reliably for data collection and analysis.

3.5. Data Analysis

Data is entered into Excel and converted into tables and graphs to facilitate analysis.

The following are calculated:

Meanings for each TAM element

Percentages (%) to illustrate student trends

The results are interpreted within the TAM framework to measure:

First; Students' perception of the benefits of AI.

Second; Ease of use.

Third; Students' intention to continue using it in the future.

The data collected through the questionnaire is analyzed using descriptive statistical methods. Responses are extracted from Google Forms and converted to Excel for organization and analysis. Percentages and means are calculated to measure students' attitudes toward using artificial intelligence tools in academic writing. The analysis focused on the three main variables of the Technology Acceptance Model (TAM), developed by Fred Davis.

Perceived Usefulness

Perceived Ease of Use

Behavioral Intention

The arithmetic mean for each dimension is calculated by summing the scores for its respective questions and dividing by the number of questions, in order to measure students' acceptance of artificial intelligence tools.

The data are analyzed using descriptive and inferential statistical methods. Descriptive statistics included calculating means and percentages to measure students' attitudes toward using artificial intelligence tools in academic writing. Correlation analysis is also used to examine the relationship between the variables of the Technology Acceptance Model (TAM): perceived usefulness, perceived ease of use, behavioral intention, and time-saving.

3.5.1 Perception of Usefulness

The results showed that the majority of students believe that artificial intelligence tools are useful in completing academic writing tasks, with a mean score of 4.1, indicating a high level of agreement. Furthermore, the percentages showed that more than 75% of participants believe these tools help them save time and organize their thoughts better.

Students are aware of the useful advantages of AI technologies in supporting academic writing, as evidenced by the results' high mean score on this axis. The main benefits are time savings, concept organization, and language proficiency improvement. This pattern shows that people are aware of how beneficial these resources are for raising academic achievement.

3.5.2 Ease of Use

The results showed that students find AI tools easy to use, with a mean score of (3.9), reflecting a positive trend towards ease of use. The findings showed that most students had little trouble using AI tools, indicating that these technologies had an easy-to-use interface. Additionally, the data revealed that only a tiny percentage of students had concerns regarding some technical features, which could be connected to their degree of digital proficiency.

3.5.3 Behavioral Intention to Use

The results showed a clear intention among students to continue using artificial intelligence tools in the future, with a mean score of (4.0), indicating a high level of acceptance of this technology in the academic context.

The results showed a positive trend toward continued use of AI tools in the future, indicating that the students' current experience is largely satisfactory. This confirms that perceived usefulness and ease of use contribute to increased intent to use the tools, which aligns with the theoretical framework adopted in the study.

Descriptive statistics are used to evaluate the data in order to provide a clear image of how students felt about utilizing AI technologies for academic writing. Accurate data entry and statistical table organization made it easier to compare the study's three primary variables.

A five-point Likert scale is used to score the responses, and in order to calculate means and simple deviations, the responses are translated to numerical values between 1 and 5. These aids in precisely assessing the participants' level of agreement or disagreement.

The comparison of the three components of the Technology Acceptance Model (TAM), which is created by. The purpose of this comparison is to gauge how well students accepted artificial intelligence technologies based on how beneficial and simple they thought they are, as well as how this opinion affected their desire to utilize them in the future.

Based on the findings, the data analysis demonstrated that undergraduate students studying English as a second language have favorable opinions about employing AI technologies for academic writing assignments. The findings also showed that students thought these tools are very helpful and simple to use, which is evident from their desire to keep using them in the future. These results align with the tenets of the Technology Acceptance Model (TAM), which holds that a tool's chance of being adopted is increased when it is perceived as practical and user-friendly. Overall, the analysis's findings indicate that AI technologies help English language learners save time and enhance their academic writing process.

4. Results and Discussion

The study results showed that English as a Foreign Language (EFL) students have positive attitudes toward using artificial intelligence tools in academic writing tasks. Statistical analysis indicated that the perceived usefulness is high, as most students agreed that AI tools help them complete writing tasks faster and reduce the time and effort required to prepare academic texts. Ease of use is also rated highly, suggesting that students do not face significant difficulties when using these tools.

The findings also show that students have a significant desire to use AI technologies going forward, particularly for activities including grammatical correction, content management, and idea production. This shows that the technology is clearly accepted in the academic setting and validates its function in helping English language learners who are learning the language to write.

From an interpretative standpoint, these findings align with the tenets of the Technology Acceptance Model (TAM), which suggests that a user's desire to accept any new technology is mostly determined by perceived utility and usability. It has been demonstrated that students' desire

to utilize AI tools is positively influenced by their opinion of how beneficial they are for saving time. A tool's acceptability and usage in academic work increase with its ease of use.

The results of this study align with Davis's technology acceptance model, which emphasizes that perceived usefulness and ease of use are key factors influencing technology acceptance. They also corroborate the findings of Venkatesh et al., whose research demonstrated that users' perception of a technology of usefulness and ease of use strengthens their intention to use it in the future. Furthermore, these results are consistent with recent studies on artificial intelligence in education, which indicate that students view AI tools as effective means of improving academic performance and saving time and effort when completing written tasks.

Overall, the findings show that AI tools are crucial for increasing students' academic writing productivity, especially when it comes to time savings and enhancing the caliber of written work. These results also emphasize how crucial it is to carefully incorporate contemporary technology into the classroom to guarantee their efficient and responsible use.

5.1 Conclusion

According to the study's findings, artificial intelligence technologies seem to be a useful way to help students learning English as a second language complete academic writing assignment. The results demonstrated that students do not see these tools as a replacement for their abilities, but rather as a tool that speeds up the writing process and enhances the structure of thoughts and caliber of written texts. This indicates a high degree of involvement and acceptance of contemporary technology in the academic setting.

The findings also show that students' views about technology are significantly influenced by acceptance-related characteristics, such as perceived utility and usability. This implies that giving students access to user-friendly digital tools with obvious educational benefits will boost their motivation and productivity while completing assignments.

Overall, this study highlights how crucial it is to include AI technologies into the teaching and learning process in a systematic and planned way while also ensuring that students are guided toward ethical use. These results can aid in the creation of contemporary teaching methods that stay up with the digital revolution and take use of technology's capacity to enhance academic learning.

Finally, to verify the reliability of the questionnaire, Cronbach's Alpha coefficient is calculated using the participant data. The results showed a reliability coefficient of 0.864, indicating a good level of internal consistency among the questionnaire items and confirming the instrument's reliability in data collection and analysis.

6. Recommendations

1. Encourage the use of artificial intelligence tools in academic writing tasks within an organized educational framework.
2. Organize training workshops for students on the correct and responsible use of these tools.

3. Integrate AI technologies into curricula in a gradual and well-planned manner.
4. Clarify guidelines related to the ethical use of AI in the university environment.
5. Conduct future studies on larger samples or in different disciplines to strengthen research results and generalize them.

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