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PAPER

College Students' Intention to Use AI Tools in Academia

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ABSTRACT

While artificial intelligence (AI) tools have great potential to enhance college students' learning experiences, many higher education institutions are concerned about the adoption of AI tools in college courses and assume that college students' may misuse them. However, very little research has been conducted that examines college students' intention to use AI tools for academic purposes. The purpose of this study was to examine factors predicting college students' intention to use AI tools for academic purposes. Eighty-four students taking a strategic communication course at a mid-western university in the United States participated in the study. The results of this study's regression analysis showed that college students perceived usefulness of and self-efficacy in using AI tools predicted their intention to use them for academic purposes, while perceived ease of use was not a significant predictor. In addition, the analyses of open-ended questions showed that college students understand both the benefits and challenges AI tools may bring to academia. The study is significant in that it found that not every student agrees to the use of AI tools for academics, and students' understanding of AI tools is mature. The results reject the assumption that many college students may misuse AI tools for academic purposes. Further discussion is provided.

KEYWORDS

artificial intelligence (AI) tools, higher education, ease of use, usefulness, self-efficacy, intention to use AI tools

1 INTRODUCTION

Artificial intelligence (AI) has emerged as an innovative technology for enhancing students' learning experiences in higher education [1], [2]. AI tools (e.g., ChatGPT) are widely disseminated to the public, and more faculty and students are adopting AI tools in higher education. Some discipline-specific programs already offer independent courses on AI tools. For example, Syracuse University has offered a semester-long AI tool course for communication students, and the University of Pennsylvania has offered teaching with AI for K-12 and higher education educators. In addition, massive open online courses such as Udemy, Coursera, and Grow with Google offer AI courses for educators.

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Higher education has encountered opportunities and challenges with the emergence of AI tools [2], [3], [4], [5]. For opportunities, AI tools can provide more meaningful learning experiences by providing personalized learning, reducing students' cognitive load, and helping students engage in higher-order thinking [6], [7]. Several researchers reported the positive effects of AI tools on students' learning outcomes [5], [8]. For example, Lee et al. [8] conducted an experimental study where one group of healthcare students used an AI chatbot for 50-minute after-class review sessions twice a week for two weeks, while the control group did not. Lee et al. found that students in the experimental group demonstrated statistically higher learning motivation, attitude, and self-efficacy. In addition, Yilmaz and Yilmaz [5] found the college students in the experimental group who used an AI tool (e.g., ChatGPT) for their programming application homework demonstrated higher computational thinking skills, programming self-efficacy, and learning motivation than those in the control group. These empirical studies demonstrated the positive impact of integrating AI tools on college students' learning outcomes.

However, higher education institutions are also concerned about potential challenges, such as the intentional misuse of AI tools (e.g., plagiarism), negative influence on students' creativity and critical thinking, and enhanced bias and misinformation [2], [4]. It seems that concerns about misuse are more prominent among administrators and faculty members than among students. For example, Hasaneinn and Sobaih [9] interviewed 85 college students, 32 faculty members, and 21 administrators in public universities in Saudi Arabia. They found that the administrators had very negative perceptions of using AI tools for academic purposes, while faculty members expressed both positive and negative aspects, and students favored using AI tools. Such fear and misconceptions about AI tools impede the adoption of AI tools to enhance students' learning experiences in higher education.

Understanding students' intention to use AI tools for academic purposes is significant, as their views relate to actual behaviors [2], [10], [11]. In particular, the intention to use a new technology has been considered a strong predictor of the actual behavior of using new technologies [10], [11]. Unfortunately, very little empirical research regarding U.S. college students' intention to use AI tools for academic purposes has been conducted. According to well-established theories such as the Theory of Planned Behavior [10] and the Technology Acceptance Model [11], the intention to use new technology for certain purposes is the most immediate antecedent of actual technology adoption and behavior. In this study, we aimed to examine factors predicting college students' intention to use AI tools for academic purposes and uncover their perspectives on AI tools for academic usage.

2 LITERATURE REVIEW

2.1 Artificial intelligence

Artificial intelligence refers to machines that can perceive, recognize, learn, react, and solve problems [4], [12]. Derived from a combination of computer science, machine learning, and information technology, AI is generating a new data revolution [13]. Technologies such as ChatGPT, DALL-E, and Adobe AI are common examples of AI-oriented tools. AI's ability to efficiently incorporate knowledge into routine tasks highlights its role in data analytics and defines it as a system that accurately processes vast amounts of data, learns from it, and utilizes this knowledge to achieve specific goals and complete activities [14].

AI has revolutionized learning through personalization and improved outcomes [15], [16], [17], [18]. In education, AI encompasses intelligent tutoring systems, smart

classrooms, and AI-enabled assessments that adapt to individual learners' needs to enhance engagement and success [19], [20]. Studies have demonstrated the efficacy of AI-based systems, such as the Yixue Squirrel AI adaptive learning system and AI chatbots, in improving students' academic performance and learning experiences [8], [21], [22]. These innovations illustrate AI's potential to transform education by providing personalized learning pathways and fostering greater academic achievement.

2.2 Perceived ease of use and the intention to use AI tools

Perceived ease of use is a key variable that predicts the intention to use a new technology [11]. Perceived ease of use is defined as the degree to which users believe that a particular system is easy to use. For university students, it is possible to assume that their decision to use new technology, such as AI tools, is influenced by how easy they perceive using that technology to be. Studies have shown that when students perceive AI tools as user-friendly and straightforward, their intention to use these tools increases significantly. For instance, research conducted among Hanoi students revealed that perceived ease of use significantly affected their intention to use AI technology in learning [23]. In addition, in a study examining the factors influencing students' intention to adopt and use ChatGPT in higher education, perceived ease of use was a significant predictor of intention to use AI tools [24]. This finding is consistent across various educational contexts, indicating that perceived ease of use can be a critical determinant of college students' AI adoption for academic purposes.

2.3 Perceived usefulness and the intention to use AI tools

Perceived usefulness refers to users' beliefs about how much new technology can enhance their academic performance. In educational settings, this can be interpreted as students' tendency to use or avoid the application of an AI tool based on their belief in its potential to improve their academic performance [25]. Perceived usefulness has been consistently identified as a significant predictor of students' intention to use AI tools. For example, Dang [23] found that perceived usefulness significantly affects business college students' intention to use AI technology for academic purposes. In addition, a study on accounting students found that perceived usefulness significantly affects AI technology adoption [26]. This study highlighted that when students perceive AI tools as useful for their academic tasks, their intention to use AI tools increases. When students perceive that AI tools can help them achieve better grades, understand complex concepts, or complete assignments more efficiently, their intention to use these tools increases. The results of the existing studies show that perceived usefulness is a factor that predicts college students' intention to use AI tools for academic purposes.

2.4 Self-efficacy in using AI on the intention to use AI tools

Self-efficacy in using AI tools refers to students' beliefs in their ability to use AI tools successfully. This factor is crucial in predicting students' intention to adopt AI technologies for academic purposes. Higher levels of self-efficacy are associated with the likelihood of AI technology adoption [7], [27]. Research has shown that self-efficacy directly affects students' intention to participate in AI-related activities. For instance, Chen et al. [27] found that students with higher self-efficacy in AI programming are more likely to engage in AI software development. In addition, Morales-Garcia et al. [7]

found that students' self-efficacy in using AI technologies is positively correlated with their intention to use them for academic purposes [28]. Higher levels of self-efficacy consistently correlate with increased intention to use AI tools for academic purposes.

2.5 Research question

The purpose of this study is to examine the factors that predict college students' intention to use AI tools for academic purposes and explore their perspectives on AI in academic settings. Three factors identified in the literature review that predict students' intentions to use AI tools for academic purposes are perceived ease of use, perceived usefulness, and self-efficacy in using AI. Two specific questions that guide our study are presented below.

- What factors predict college students' intention to use AI tools for academic purposes?
- What are the college students' perspectives on AI in academic settings?

3 METHOD

3.1 Participants

Eighty-four undergraduate students out of a total of 87 enrolled in 16-week strategic communication courses at a Midwest university in the United States participated in the study, resulting in a participation rate of 96.6%. The average age of participants was 20.54 years, ranging from 19 to 23. Most of the students were native speakers (96.4%), Caucasian (72.6%), sophomores or above (98.8%), and full-time students (95.2%). Table 1 illustrates the detailed demographic information of the participants.

Table 1. Social and demographic information about participants (n = 84)

Demographic Information		Number of Participants	Percentage (%)	Total
Gender	Female	66	78.6	84
	Male	15	18.8	
	Other	3	3.8	
Language	Native speaker	81	96.4	84
	Non-native speaker	3	3.6	
Ethnicity	Caucasian	61	72.6	84
	African American	11	13.1	
	Asian	2	2.4	
	Other	10	11.9	
Academic grade	Freshmen	1	1.2	84
	Sophomore	20	23.8	
	Junior	43	51.2	
	Senior	20	23.8	
Academic status	Full-time	80	95.2	84
	Part-time	4	4.8	

3.2 Research contexts

The study was conducted in a course titled "Research Methods in Strategic Communication." Data were collected over two semesters, with three sections comprising 28–30 students each. The curriculum focused on executing and evaluating research inquiries tailored to diverse public relations scenarios, underlining research's pivotal role in strategic decision-making, message construction, media tactics, and campaign evaluation.

The course centered on three distinct research projects—secondary research, in-depth interviews, and surveys—to construct a comprehensive research portfolio addressing all facets of the research process, findings, interpretations, and public relations strategies to enhance a client's communication plan.

Throughout the process, the AI tools—including generative AI (e.g., ChatGPT, Gemini), image editing AI tools (e.g., Dall E and Adobe AI), content creation AI (e.g., Jasper), social tools (e.g., Snapchat AI and Social Bee), and data analysis AI tools (e.g., Polymer and IBM Watson)—were introduced to students and it was explained to them how to use these tools to execute diverse research activities, such as searching client backgrounds, generating research concepts, visualizing the data, and summarizing key findings for their reports. While the use of AI was suggested as a recourse, it remained optional, and students were allowed to exercise autonomy based on their personal stance toward AI tools in academic settings.

3.3 Instruments

The online survey was used to address the research questions. It consisted of demographic and background information, AI, and open-ended questions. The demographic and background questions included participants' age, gender, grade, language, and ethnicity. The AI questions asked about participants' perceived ease of using AI tools, usefulness of AI tools, self-efficacy in using AI tools, and intention to use AI tools. Lastly, the two open-ended questions asked about students' viewpoints on the benefits and concerns of using AI tools in the discipline of strategic communication. More specific information about the online survey and open-ended questions is presented below.

Perceived ease of using AI tools. To measure the students' perceived ease of using AI tools, the study adapted questions from Davis [11]. Four items, such as "Learning to operate an AI tool would be easy for me," were used to measure ease of use. A 5-point Likert scale was used, where **1** denoted strongly disagree and **5** denoted strongly agree. Cronbach's alpha for perceived ease of use for the participants was .84.

Perceived usefulness of using AI tools. Four items were adapted from Davis [11] to measure the perceived usefulness of AI tools for academic tasks. An example of a question item is "I believe integrating AI tools like ChatGPT into my academic tasks will be helpful." A 5-point Likert scale was used, where **1** denoted strongly disagree and **5** denoted strongly agree. Cronbach's alpha for the perceived usefulness of AI for the participants was .88.

Self-efficacy in using AI tools. Self-efficacy in using AI tools was measured by five questions adapted from Tsai et al. [29]. An example of a question is "I am confident that I have a good understanding of the diverse features of AI tools." A 5-point Likert scale was used, where 1 denoted strongly disagree and 5 denoted strongly agree. Cronbach's alpha for self-efficacy in using AI tools for the participants was .92.

Intention to use AI. To measure the level of students' intention to use AI tools for academic purposes, the study adopted four questions from Alkali and Mansor [30].

An example of an item is "I intend to use AI tools in my upcoming academic tasks." A 5-point Likert scale was used, where 1 denoted strongly disagree and **5** denoted strongly agree. Cronbach's alpha for intention to use AI tools for academic purposes for the participants was .91.

Open-ended questions. To gather in-depth information about the benefits and concerns of using AI tools, the following two open-ended questions were asked: "What are the benefits or strengths of using AI tools to complete academic tasks? Please provide your answer as thoroughly as possible" and "What are the concerns of using AI tools in academic tasks? Please provide your answers as thoroughly as possible."

4 RESEARCH PROCEDURES

The research was approved by the institutional review board on the campus where the current research was conducted. At the end of the course, a recruiting email with the online survey link was sent to all the students enrolled. The online survey was administered once students filled out the online consent form. Participation in the online survey was entirely voluntary, and no compensation was provided.

5 RESULTS

5.1 Factors predicting college students' intention to use AI tools for academic purposes

Table 2 presents the mean and standard deviation of each variable. The means for perceived ease of use, perceived usefulness of AI tools, self-efficacy in using AI tools, and intention to use AI tools for academic purposes are 3.81 (SD = 0.73), 3.59 (SD = 0.84), 3.21 (SD = 0.94), and 2.97 (SD = 1.04), respectively.

Table 2. Mean and standard deviation of ease of use, usefulness, self-efficacy, and intention

Dimension of Scales	M	SD
Perceived ease of use (α = .84)	**3.81**	**0.73**
Learning to operate an AI tool would be easy for me.	4.11	0.87
I believe I can easily instruct an AI tool to perform any academic tasks I desire.	3.65	0.96
The manner in which the AI tools communicate with me is easy to understand.	3.73	0.87
It would be easy for me to become skillful at using an AI tool.	3.77	0.89
Perceived usefulness of AI Tools (α = .87)	**3.59**	**0.84**
I believe integrating AI tools such as ChatGPT into my academic tasks (e.g., assignments, research) will be helpful.	3.59	1.04
I agree with the idea that integrating AI tools into my academic tasks (e.g., assignments, research) will be a benefit to my learning.	3.45	0.99
The AI, too, is integrated within my academic tasks (e.g., assignments, research) and can assist me in attaining learning outcomes more efficiently.	3.54	0.95
Strategic communication students should acquire proficiency in utilizing AI tools for their academic tasks (e.g., assignments, research) and future careers.	3.78	0.99

(Continued)

Table 2. Mean and standard deviation of ease of use, usefulness, self-efficacy, and intention *(Continued)*

Dimension of Scales	M	SD
Self-efficacy in using AI tools (α = .92)	**3.21**	**0.94**
I am good at using diverse AI tools.	2.87	1.19
I am confident that I have a good understanding about diverse features of AI tools.	2.75	1.21
I am confident that I can easily learn how to use diverse AI tools for my own purposes (e.g., academic).	3.47	1.02
I am confident that I can select appropriate AI tools for my own purposes.	3.42	1.04
I am confident that I have the necessary skills to work with diverse AI tools.	3.56	0.97
Intention to use AI Tools (α = .91)	**2.97**	**1.04**
I intend to use AI tools in my upcoming academic tasks.	2.93	1.26
I would recommend them to colleagues who want to use AI tools for their academic tasks.	3.18	1.12
I actively seek out opportunities to integrate AI tools into my academic tasks.	2.51	1.27
I intend to use AI tools in my future career in strategic communications to generate advertising and/or public relations materials.	3.29	1.06

Note: Responses were recorded on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Pearson correlations (refer to Table 3) indicated that the intention to use AI tools for academic purposes was positively correlated with perceived ease of use ($r = .38$, $p < .01$), perceived usefulness of AI tools ($r = .71$, $p < .01$), and self-efficacy in using AI tools ($r = .54$, $p < .01$).

Table 3. Pearson correlations among variables

		M	SD	1	2	3	4
1	Perceived ease of use	3.81	0.73	1			
2	Perceived usefulness of AI tools	3.59	0.84	.42**	1		
3	Self-efficacy in using AI tools	3.21	0.94	.62**	.51**	1	
4	Intention to use AI tools	2.97	1.04	.38**	.71**	.54**	1

Note: ** $p < .01$.

A multiple regression analysis was performed to determine the best linear combination of perceived ease of use, perceived usefulness, and self-efficacy in using AI tools to predict the intention to use AI tools for academic purposes. The combination of variables significantly predicted the intention to use AI tools for academic purposes, $F (3, 80) = 34.481$, $p < .001$, with two variables significantly contributing to the prediction. The beta weights, presented in Table 4, suggest that the perceived usefulness of AI tools contributes most to predicting the intention to use AI tools for academic purposes, followed by self-efficacy in using AI tools. The adjusted R squared value was .554, indicating that 55.4% of the variance in the intention to use AI tools for academic purposes was explained by the model. According to Cohen [31], this is a large effect.

Table 4. Multiple regression predicting intention to use AI tools for academic purposes

Variable	B	SE B	ß	p
Perceived ease of use	–.038	.135	–.027	.780
Perceived usefulness	.787	.111	.620	.000
Self-efficacy	.263	.112	.237	.022
Constant	–.567	.456		

Note: Adjusted $R^2 = .554$, $F(3, 80) = 34.481$, $p < .001$.

5.2 College students' perspectives on AI in academic settings

To address the second research question, the open-ended questions about AI benefits and academic concerns were analyzed using content analysis. The first two authors in this study created an initial draft of a codebook by reading 50% of the answers. The unit of the analysis is a meaning. If the answer has more than one meaning, those meanings are all counted in the codebook. Then, the second author trained one graduate assistant with the codebook. After the training, the researcher and the graduate assistant conducted blinded coding with two open-ended questions until they reached 100% agreement. During the iterative processes, the coding book was slightly revised and refined. Any discrepancies were addressed through discussion between the researcher and the graduate assistant.

5.3 Benefits of using AI tools for academic purposes

Students reported six benefits of using AI tools for academic purposes (refer to Table 5). The total number of frequencies for benefits was 113. The specific frequency of each theme related to the benefits of using AI tools for academic tasks is presented in Figure 1.

Table 5. Benefits of using AI tools for academic purposes

Theme	Example	Frequency
Idea Generation	"A benefit is to get a basis of answers from AI that can allow more ideas from yourself to open up. It helps generate ideas to get you started."	41
Efficiency and Timesaving	"AI can streamline several processes like research and data analysis. Instead of sifting through information, AI is capable of showing you what you're looking for almost instantly."	29
Accuracy and Clarity	"AI tools give quick answers and condensed insights that may possibly be buried deep on the internet. It is helpful in concluding base-level information or using it to confirm sources."	19
Availability and Accessibility	"The benefits of AI are that it is available 24/7 and it saves time. It can make research go faster, as all you have to do is check over it."	12

(Continued)

Table 5. Benefits of using AI tools for academic purposes *(Continued)*

Theme	Example	Frequency
Support in Specific Tasks	"AI is able to make quick and dirty prototypes and have code debugged for mistakes. It helps with formatting and generating new possibilities for content creation."	10
No Specific Benefits	"I don't see any good benefits to using AI."	2
	Total	113

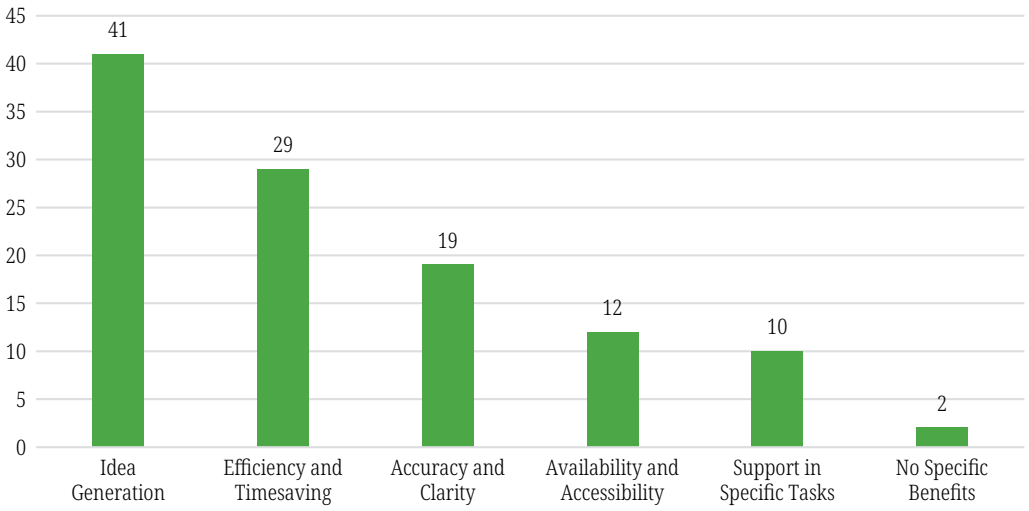

Fig. 1. Benefits of using AI tools for academic tasks

First, idea generation was the most frequently mentioned benefit of using AI tools for academic purposes (n = 41). Students used AI tools for brainstorming, generating new ideas, and aiding the creative process by offering diverse suggestions and enhancing initial thoughts. Second, efficiency and time saving were the second most frequently mentioned benefits of using AI tools (n = 29). Students said that AI tools were helpful to their academic tasks because they reduced the amount of time required to complete tasks and handle repetitive work quickly and effectively. Accuracy and clarity were the third most frequently mentioned benefits of using AI tools (n = 19). Students viewed the AI tools as offering assistance by providing precise and accurate information and ensuring a better understanding of complex topics. Accessibility was the fourth most frequently mentioned benefit of using AI tools (n = 12). Students viewed AI tools as offering assistance anytime and facilitating faster and more efficient access to information and communication. The fifth, support in specific tasks, was the next most frequently mentioned benefit (n = 10). Students used AI tools to create prototypes, debug code, format assignments, and generate specific types of content. Last, no specific benefits were mentioned (n = 2).

5.4 Concerns about using AI tools for academic purposes

The students mentioned seven concerns about AI use in their academic setting (refer to Table 6). The total number of frequencies was 109. Figure 2 presents the specific frequency of each theme related to the concerns of using AI tools for academic tasks.

Table 6. Concerns of using AI tools for academic purposes

Theme	Example	Frequency
Reliability and Accuracy	"The concerns are that it has false information that could cause issues with research. One of the biggest concerns is the presentation of inaccurate information or, more commonly, outdated information."	29
Ethical Issues	"My biggest concern is the sourcing of data for training AI programs. So many visual AI programs especially train their tools in ways I find extremely unethical, and I would call it theft."	28
Impact on Creativity and Effort	"If we rely too much on AI, there won't be as much creativity in the world and everything will be bland and monotonous. It largely cuts out human emotion, creativity, and intuition."	14
Legal Issues	"The big concern for me with AI is false information and copyright issues. AI could provide an incorrect fact or generate an image that could cause issues with copyright."	14
Employment and Economic Impact	"My concern is that it will take over a lot of jobs in the future. It scares me that AI is doing things that we get paid to do because if people see that these free tools can be used, then they'll fire us and hire the robots."	11
Dependency and Laziness	"People could rely on AI too much. I think the concern lies when people rely heavily on AI tools instead of utilizing aspects of their own creativity."	11
Broad Concerns	"Everything, it's a slippery slope."	2
	Total	109

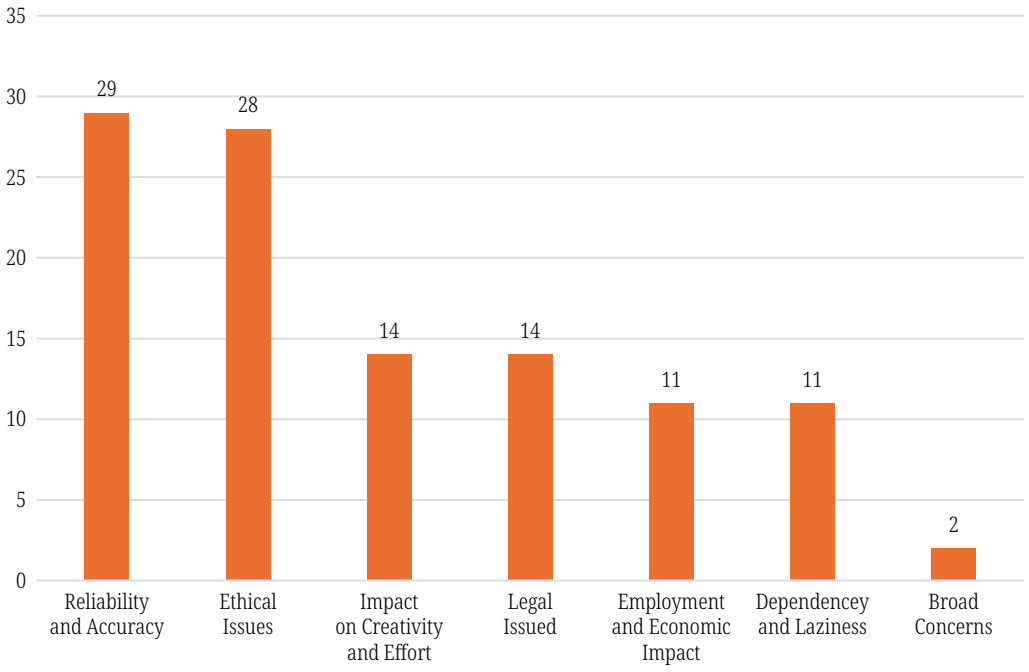

Fig. 2. Concerns of sing AI tools for academic tasks

First, 29 comments were about reliability and accuracy. The students mentioned some potential issues related to the correctness and trustworthiness of the information provided by AI tools. Second, the students mentioned ethical concerns, including plagiarism, the morality of data-sourcing practices, and algorithmic bias. Third, 14 comments were about the impact on creativity and effort. They feared that excessive reliance on AI tools might diminish human creativity, effort, and the uniqueness

of the work produced and lead to a potential decrease in original thought and emotional connection in creative projects. The fourth concern related to the use of AI was legal issues, including copyright infringement, data privacy, and the potential for AI to be used unethically. Fifth, 11 comments from the analysis were about employment and economic impact. The students were concerned about AI replacing human jobs, particularly in creative and analytical fields. AI's efficiency and lower cost could result in unemployment and fewer job opportunities. The sixth concern about AI was dependency and laziness (n = 11). AI tools could lead to a decline in personal effort, critical thinking, and motivation. There is also potential for unethical use, such as cheating or misrepresenting AI-generated work as one's own. Last, two comments were very general and broad concerns about AI use.

6 DISCUSSION

The purpose of this study was to examine the factors predicting college students' intention to use AI tools for academic purposes and to uncover their perspectives on AI in academic settings. Multiple regression analysis results revealed three variables—ease of use, usefulness of AI tools, and self-efficacy—predicted college students' intention to use AI for academic purposes. In particular, the usefulness of AI tools and self-efficacy statistically significantly predicted college students' intention to use AI tools for academic purposes. The results demonstrate that the more students perceive them as useful and are confident in using AI tools, the more likely they are to intend to use AI tools for academic purposes. In addition, students have well-developed and balanced views of the benefits and concerns of using AI tools for academic purposes. This differs from the general view that many college students may lack an understanding of AI in academic settings and misuse AI tools for cheating.

One interesting finding of this study is that only two variables—perceived usefulness and self-efficacy—are statistically significant in explaining the intention to use AI tools, which is different from the hypothesis that all three factors are significant predictors (see Figure 3). One possible explanation is that perceived usefulness and self-efficacy are more important variables for college students than ease of use. Part of the reason for this is, perhaps, that many college students in their early 20s are comfortable learning and using AI tools. They may not consider ease of use as a significant variable, assuming they can quickly adapt to new AI tools.

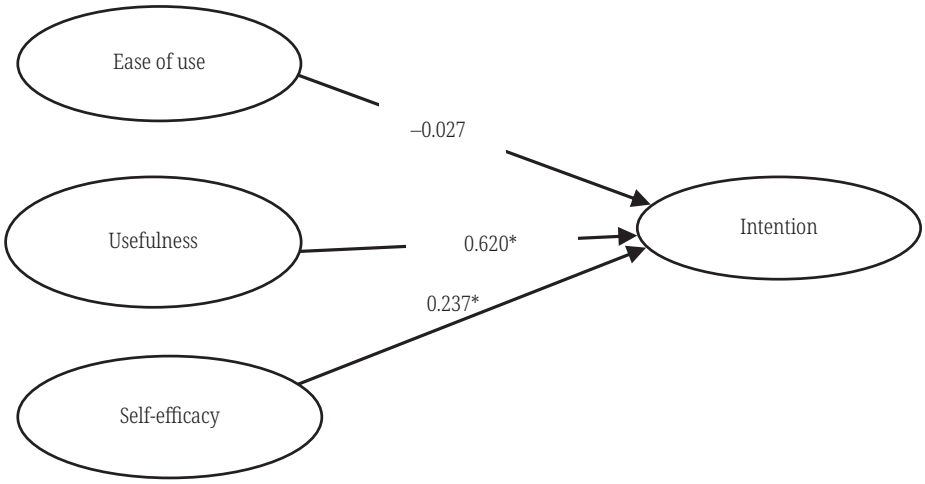

Fig. 3. Multiple regression model predicting intention to use AI tools

Note: *p < .05.

A second interesting finding is that students showed a low intention to use AI tools for academic purposes (M = 2.97, SD = 1.04). Our results align with the existing study conducted by Amani et al. [32], which found that only 5% of college students out of 813 participants reported using ChatGPT to complete their homework. The results are somewhat different from the general assumption that many college students may heavily rely on AI tools for academic purposes, such as project and assignment completion, which is also a significant concern among administrators and faculty in higher education [9], [32]. In a survey study involving 243 faculty and staff members, Amani et al. [32] found that 55% of the faculty and staff believed students were somewhat likely or extremely likely to engage in plagiarism or academic dishonesty following the emergence of ChatGPT. This figure represents a 20% increase compared to before ChatGPT emerged.

Students' low intention to use AI tools for academic purposes can be interpreted in relation to the complexity and difficulty of the academic tasks in the course where the study was conducted. Tossel et al. [22] found similar results, showing that senior college students who completed their final essay project using ChatGPT in an engineering course didn't feel a sense of ownership over the project outcomes and had to spend a significant amount of time fact-checking and editing the content generated by ChatGPT. The students didn't trust the content generated by ChatGPT. Their intention to use ChatGPT for academic tasks did not significantly change even after using it for the final project. The nature of the course's final project required students to engage in higher-order and critical thinking, and ChatGPT may not have met their expectations for handling complex and ill-structured tasks. The results suggest that, while ChatGPT can serve as a source of information, it may not fully meet the needs of students working on more complex assignments. The three projects assigned in the course where the current study was conducted required students to engage in higher-order thinking and critical analysis. These projects involved understanding given contexts, setting project boundaries, collecting data through appropriate methods such as interviews and surveys, analyzing and synthesizing the data, and interpreting results for clients. The current state of AI tool development may not be sufficiently advanced to provide substantial assistance in completing these complex academic tasks.

Furthermore, the results of the open-ended question analysis revealed that college students have well-developed and balanced perspectives on the benefits and concerns of using AI tools for academic purposes, including academic ethics [2], [3], [8], [9]. The frequencies for perceived benefits and concerns students listed were 113 (refer to Table 5) and 109 (refer to Table 6), respectively. Students listed diverse aspects of benefits (see Figure 1) and concerns (see Figure 2) about AI tools being used for academic purposes, demonstrating they had developed mature perspectives about AI tools. Chan and Hu [4] found similar results, in that college students understand the benefits of using ChatGPT for academic purposes—such as personalized feedback, ease of use, and availability—but are concerned about lack of accuracy and transparency, plagiarism, and overreliance on the tool. The study implies that college students may have more mature perspectives about AI in higher education than others (e.g., administrators and faculty) think. This suggests that students may possess the capacity for self-regulated learning when using AI, and considering that self-regulation is one of the most critical indicators for maximizing learning outcomes [34], this insight has important implications for instructional design and policy development in AI-integrated education.

6.1 Implications for practicing AI tools in higher education

The use of AI tools in higher education is becoming unavoidable due to their pervasive nature [4], [9], [33]. We may need to shift our perspective on AI tools, viewing them as collaborators rather than harmful tools [33]. It is important to acknowledge that college students are aware of both the potential benefits and concerns associated with AI tools in academia. Based on the results of the study, several suggestions can be made for further integrating AI tools into academic processes.

6.2 Enhance the perceived usefulness of AI tools for meaningful learning

Educators may provide specific examples of AI tools relevant to professional use within their disciplines. The changes brought by AI are occurring across various disciplines, including education, strategic marketing, and public relations [1], [13], [33]. For instance, in strategic communication, AI has revolutionized marketing and public relations by automating routine tasks such as social media management, conducting comprehensive audience analysis, streamlining content generation processes, and enhancing measurement and analysis capabilities [33]. Educators might introduce students to examples of how AI can be used in a real field, which may enhance the perceived value of using AI tools for meaningful learning.

6.3 Build students' confidence in using AI tools

Two approaches—professional workshops and integrating AI practice into the curriculum—can be used to build students' confidence in using AI tools. The professional workshop approach involves structured, interactive training sessions where students actively engage with AI technologies. Hands-on workshops provide opportunities for students to explore AI tools under guidance, helping them develop practical skills and enhance their self-efficacy in using these tools. In addition, integrating AI practices into the curriculum allows students to use AI tools in course activities and assignments, applying them in real academic contexts [5], [22]. By incorporating AI tools into diverse learning activities, students can gradually build their skills and become more confident in using these technologies.

6.4 Guide students to be responsible in their use of AI tools

Helping students use AI tools responsibly is crucial [34]. Two steps of guidance that educators can apply are proposed. In the first step, educators teach AI literacy to students by introducing AI algorithms, explaining and discussing ethical considerations explicitly related to AI-generated content in academia [35], and demonstrating how to critically evaluate AI-generated content [4]. In the second step, educators may collaboratively create guidelines with students regarding acceptable and unacceptable use of AI tools, provide examples of appropriate use of AI tools for meaningful learning, and outline course and institutional policies on the consequences of misusing AI tools for academic tasks [2], [4]. Establishing guidelines collaboratively with students is important, as their involvement in the process gives them a sense of ownership and responsibility. This is especially relevant since current technologies, such as Turnitin, may fail to effectively detect plagiarism [34].

6.5 Limitations

There are several limitations of the study. First, all the participants were students majoring in strategic communication. The results could be more generalizable if we had students with more diverse disciplinary backgrounds. Future researchers may consider recruiting a larger number of students from diverse disciplines. Second, most participants were female students (78.6%). Although this represents a generic student body in the discipline, the readers may need to be cautious in interpreting the results. Third, the survey data were collected when AI technologies were nascent. Perhaps not many college students were familiar with AI tools at the time the current research was conducted. In the meantime, AI technologies have advanced. More college students may have adopted AI tools, which might influence their intention to use AI tools for academic purposes.

6.6 Significance of the study

Despite the limitations of the study, the research is significant in several aspects. First, it highlights that self-efficacy in using AI tools is a significant predictor of college students' intention to use these tools for academic purposes. This finding adds a new dimension to the technology acceptance model (TAM), which traditionally emphasizes self-efficacy as an antecedent of ease of use and perceived usefulness [11]. Second, the study challenges the misconception that college students lack mature perceptions of AI tools. Contrary to this belief, our participants demonstrated well-balanced views and recognized both the benefits and challenges of using AI tools for academic purposes. This insight is crucial, as it fosters a more informed and responsible approach to technology in education by underscoring the importance of engaging students in discussions about ethical and effective AI use.

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