Artificial Intelligence and Attitudes towards Research in University Students

José Calizaya-Lopez[1], Ariosto Carita-Choquecahua[2], Ana Barreda-Coaquira[3], Silvana Petronila Chata Condori[4], Magdalena Marleni Marroquin Flores[5], Yaneth Aleman-Vilca[6]

Abstract

Artificial intelligence (AI) is transforming education and academic research by providing advanced tools for the search and analysis of information. This situation has changed the way university students access knowledge and research projects are developed. The aim was to determine the relationship between the use of AI and attitudes towards research in university students, according to socio-academic variables. The study was non-experimental, cross-sectional, quantitative and correlational. 2336 university students from a public university and three private universities from a town in Peru participated, intentionally chosen. A high level of AI use was found in 85.6% of students and unfavorable attitudes towards research in 46%. Likewise, the variables are not significantly related (p>0.05), therefore, attitudes towards research are explained by other variables. It´s concluded, the absence of a significant relationship between the use of AI and attitudes towards research indicates that the availability of technological tools is not sufficient to motivate research interest in university students.

Keywords: artificial intelligence, attitudes toward research, socio-academic variables, university students.

Introduction

Artificial intelligence (AI) is transforming education and academic research by providing advanced tools for information search and analysis (Luckin et al., 2018). Currently, AI-based platforms, such as writing assistants, advanced search engines, and data analysis software, are changing the way university students access knowledge and develop research projects (Zawacki-Richter et al., 2019). However, this technological evolution raises questions about its influence on students' attitudes towards research.

In this sense, there are concerns about understanding whether the ease of access to information through AI promotes greater depth in research or, on the contrary, fosters superficiality in academic processes (Selwin, 2020). While some studies indicate that AI can stimulate interest in research by simplifying complex tasks (Holmes et al., 2022), others warn of the risk of over-reliance that could weaken students' autonomy and critical thinking (Bennett & Maton, 2010).

In this context, it is essential to analyze how the incorporation of AI in higher education influences students' motivation to research, their perception of the importance of the research process, and their commitment to academic rigor. It is also necessary to explore whether these

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[1] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: jcalizayal@unsa.edu.pe. (Corresponding author).

[2] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: acarita@unsa.edu.pe.

[3] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: abarredaco@unsa.edu.pe.

[4] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: schatac@unsa.edu.pe.

[5] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: mmarroquinf@unsa.edu.pe.

[6] Universidad Nacional de San Agustin de Arequipa, Peru. E-mail: yaleman@unsa.edu.pe.

attitudes vary according to academic experience, the discipline of study, and the degree of exposure to AI tools (Castañeda & Selwyn, 2018).

AI in the university environment refers to the use of digital tools, automated systems based on algorithms, and machine learning to facilitate various academic activities, such as information collection and analysis, text writing, data interpretation, and complex problem solving (Estevez Cedeño & Sánchez-Vera, 2023).

In the educational context, AI provides students with access to personalized learning platforms, allows for automated feedback, and facilitates the use of virtual assistants (Kroff et al., 2024). However, its implementation also comes with challenges, such as potential technological dependence, reduced critical thinking, and the spread of unreliable information. For this reason, it is essential that university students develop digital skills and adopt a critical attitude towards the use of AI in their academic and research training (Selwin, 2020).

On the other hand, attitudes towards research in the university environment include cognitive, emotional and behavioral predispositions that affect the level of interest, motivation and commitment of students to the research process (Khan et al., 2018). These attitudes are reflected in the value they give to research, their willingness to develop methodological skills, and their confidence in their ability to generate new knowledge (Hernández & Mendoza, 2018).

From a psychological perspective, students' attitudes towards research are influenced by both internal factors, such as intellectual curiosity, critical thinking, and self-efficacy, as well as by external elements, institutional support, training in research methodology, and access to technological tools (Alvarez et al., 2020). Adopting a positive attitude towards research is linked to greater participation in scientific projects, the strengthening of analytical skills, and better academic and professional preparation (Ramirez & Flores, 2019).

However, various studies have pointed out that there are obstacles that can affect the development of favorable attitudes towards research, such as the perception of a complex or inaccessible activity, the lack of support from teachers, and the lack of knowledge about its applicability in professional life (Gonzales & Torres, 2021). For this reason, higher education institutions must implement strategies that stimulate students' interest in research by promoting active methodologies and the use of technologies that facilitate research learning.

In relation to previous studies on artificial intelligence and attitudes towards research, some recent studies have begun to explore how artificial intelligence can influence attitudes towards research in university students. Pérez and Zambrano (2024) found that the use of AI assistants today in the search and analysis of information increases the perception of research as an accessible activity and facilitates the development of research skills (Khan et al., 2015). However, they also warn that over-reliance on these tools can reduce critical analysis capacity.

Likewise, Rodríguez and Pérez (2022) explained the importance of teacher training in AI, since the appropriate use of these technologies can contribute to the teaching of research more efficiently and effectively.

On the other hand, in recent years the role of artificial intelligence in university education has been analyzed. The systematic review by Zawacki-Richer et al. (2019), concluded that AI facilitates access to personalized educational materials and encourages autonomous learning. Despite its benefits, some experts have pointed out certain challenges, in that sense, Holmes et al. (2022), warned that the inappropriate use of AI could limit the development of critical

thinking and creativity in university students.

Regarding attitudes towards research, Hernández and Mendoza (2018) identified that factors such as teaching accompaniment and methodological training influence students' perception of research. For their part, Ramírez and Flores (2019) observed that those students who participate in research projects from the early stages of their training tend to develop greater confidence and motivation in this area.

However, González and Torres (2021) found that the lack of training in scientific methodology and the perception of research as a complex process can demotivate students. According to these authors, it is essential that universities implement innovative strategies and take advantage of technological tools to make research more accessible and attractive.

The importance of this research lies in the growing incorporation of AI in the educational field and its possible influence on the attitude of university students towards research; One of the main challenges in university education is to encourage a positive attitude towards research, as it plays a key role in the formation of scientific competences and in the generation of new knowledge.

In this sense, the research is relevant because it seeks to understand the role that AI plays in the formation of attitudes towards research in university students, analyzing this relationship will allow us to identify innovative strategies in the educational field that promote greater participation in research and strengthen their academic and professional preparation, therefore, The results found will contribute to improving pedagogical strategies and consolidating an academic environment adapted to the digital age.

Therefore, the study set out to determine the relationship between the use of AI and attitudes towards research in university students, according to socio-academic variables.

Methods

The study was non-experimental, cross-sectional, quantitative and correlational level (Calizaya et al., 2022), the data were collected during the period of academic semester 2 of 2024.

Participants

A total of 2336 university students from a public university and three private universities from a locality in Peru participated, intentionally chosen, considering the following inclusion criteria: being an active university student, from a public or private university, in an age range of 17 to 25 years. The aim was to achieve a sufficiently large sample size to find reliable estimates in the results.

To determine the sample size, the G*Power 3.1.9.4 Program (Faul et al., 2020) was used, considering the following criteria according to the statistical tests to be used: Correlation (Bivariate normal model), F tests (ANOVA, fixed effects, omnibus, one-way, five groups), t tests (Means, difference between two independent means); with small effect sizes (0.10), probability (0.95) and margin of error (0.05).

Instrument

The instrument of attitudes towards research - revised version EACIN-R was used for Peruvian university students (Hidalgo, et al., 2023), the scale contains 28 items, divided into three subscales, disinterest in research (9 items), vocation for research (12 items) and assessment of

research (7 items), the answers are found on a Likert-type scale ranging from 0 to 4 where 0 is "strongly disagree" and 4 is "strongly agree", The total score on the scale is from 0 (low scores indicate an unfavorable attitude) to 112 (high scores indicate a positive or favorable attitude toward research). Likewise, the following considerations were added to the instrument, a one-dimensional variable on the use of artificial intelligence in scientific-academic activities, Likert-type responses were used where 1 is "never" and 5 is "always", as well as socio-academic characteristics such as age, sex, occupation, type of university, year and area of studies, in addition, the data of the informed consent were recorded.

The instrument was previously validated through expert judgment to determine the validity of content by eight judges, likewise, for the evidence of the validity of the internal structure it was carried out through Horn's parallel analysis, identifying three factors and 28 items obtaining scores greater than 0.80 a good construct, likewise, the reliability of the scale was made with Cronbach's Alpha coefficient reaching scores of 0.87 evidencing a high level of reliability, therefore, the scale presents high levels of validity and reliability to collect information.

Ethical considerations

The study was carried out respecting the ethical provisions of the Ministry of Health of Peru, in accordance with the guidelines established in resolution 233-2020-MINSA, the purpose of which is to ensure that research with human beings is carried out ethically. In addition, the international ethical principles contained in the Declaration of Helsinki were considered.

Procedure

To apply the instrument, all the corresponding processes were followed, so that both universities and students agreed with the collection of information, and were informed of the study in progress, so informed consent was obtained. The collection of information was carried out individually, and after the end of the schedule of academic activities, to ensure the greatest effectiveness of the answers and the anonymity of the respondents.

Data analysis

For data analysis, distribution, asymmetry, kurtosis and normality tests were analyzed through the Shapiro-Wilk test (Mukherjee et al., 2025), showing that there is no normal distribution ($p< 0.05$). A descriptive and comparative analysis of attitudes towards research was carried out according to sex, age, occupation, type of university, year and area of study. For the correlation and comparison of data, as part of the analysis, the following non-parametric statistical tests were used (Tsagris et al., 2018), for correlation Spearman's Rho test was used; to compare two independent samples, the biserial correlation effect size (RT) Mann-Whitney U test (RBIS) was used. The interpretative rules for rbis are as follows: no effect (rbis = 0.0), small (rbis ≥ 0.10), medium (rbis ≥ 0.30) and large (rbis ≥ 0.50). The comparison of K independent samples was performed using the Kruskal-Wallis H test and Pos Hoc tests, with the effect size used being epsilon squared (ε^2). The interpretative norms are small for $\varepsilon 2 \geq 0.01$, medium for $\varepsilon 2 \geq 0.06$ and large for $\varepsilon 2 \geq 0.14$, using the statistical program Jamovi (2025) for the analysis of the information.

Results

In Table 1, descriptive analyses of artificial intelligence and attitudes towards research were carried out, finding for the AI variable, a high level of AI use in 85.6% of students. And unfavorable attitudes towards research by 46%.

Table 1. Descriptive analysis of artificial intelligence and attitudes towards research

Variables	Level/Value	Frequency	Percentage
Artificial intelligence	Low	12	0.5%
	Middle	324	13.9%
	High	2000	85.6%
	Total	2336	100.0%
Attitudes towards research	Unfavourable	1074	46.0%
	Average	900	38.5%
	Favorable	362	15.5%
	Total	2336	100.0%

In Table 2, the AI variable and attitudes towards research were correlated, finding that the variables are not significantly related (p>0.05), therefore, attitudes towards research are explained with other variables.

Table 2. Correlation of the artificial intelligence variable and attitudes towards research

	Variables	Tests	Artificial intelligence
Rho de Spearman	Artificial intelligence	Correlation coefficient	1.000
		Sig. (bilateral)	-
		N	2336
	Attitudes towards research	Correlation coefficient	-.033
		Sig. (bilateral)	.111
		N	2336
	Interest in research	Correlation coefficient	.008
		Sig. (bilateral)	.697
		N	2336
	Vocation for research	Correlation coefficient	-.027
		Sig. (bilateral)	.185
		N	2336
	Assessment by research	Correlation coefficient	-.031
		Sig. (bilateral)	.128
		N	2336

Note. Sig.= p value (0.05). N = sample.

In Table 3, AI results and attitudes towards research were compared in 2 independent groups using the U statistical test. In the case of AI according to sex, type of university and occupation, no statistically significant differences were found (p<0.05) considering that AI does not differ in these comparison groups.

For the variable attitudes towards research, no statistically significant differences were found (p<0.05) in the variables sex and occupation of the student, however, differences were found in

the variable type of university, specifying that it is students from public universities who present more favorable attitudes towards research compared to students from private universities.

Table 3. Comparison of the variable artificial intelligence and attitudes towards research in two independent groups

IA	N	Average Range	U	rbis	Attitudes	N	Average Range	U	rbis
Sex					*Sex*				
Male	1082	1155.93	666182.5	0.07	Male	1082	1179.80	664816.5	0.07
Female	1254	1179.34	(p = .363)		Female	1254	1158.75	(p = .403)	
Type of university					*Type of university*				
Public	445	1135.32	405983.5	0.007	Public	445	1245.19	3866193 5	0.007
Private	1891	1176.31	(p = .163)		Private	1891	1150.45	(p = .008)	
Occupation					*Occupation*				
Student	2225	1166.35	118704.5	0.058	Student	2225	1173.89	111502.0	0.058
Study and work	111	1211.59	(p = .084)		Study and work	111	1060.52	(p = .084)	

Note. N = Sample; U= U for Mann Whitney; rbis = Effect size (biserial correlation)

In Table 4, the results of AI and attitudes towards research were compared according to area of studies, in the results of AI, no statistically significant differences were found (p>0.05), therefore, students of science and engineering, social sciences and health sciences present similarly high levels of use of artificial intelligence.

However, it is specified that students of health sciences (Pos Hoc tests) have more favorable attitudes towards research than students of sciences and engineering and social sciences (p<0.05).

Table 4. Comparison of the variable artificial intelligence and attitudes towards research according to area of study

Variable	Area of studies	N	Average Rank	*H*	*gl*	*p*	e²
Artificial intelligence	Science and Engineering	871	1188.24	1.888	2	.389	.016
	Social sciences	965	1152.74				
	Health Sciences	500	1164.53				
Attitudes towards research	Science and Engineering	871	1092.01	44.124	2	.000	.016

Social sciences	965	1149.04			
Health Sciences	500	1339.31			

Note: N= sample; H = Kruskal Wallis statistic: p = significance (0.05); ε^2 = Epsilon-squared (effect size).

In table 5, the results of AI and attitudes towards research were compared according to the year of studies, for the AI variable no statistically significant differences were found (p>0.05) describing that the high use of artificial intelligence occurs in all students.

However, it was found that students in the last years of study have more favorable attitudes towards research (Pos Hoc tests) compared to students in the first years of study (p<0.05).

Table 5. Comparison of the variable artificial intelligence and attitudes towards research according to year of studies

Variable	Year of studies	N	Average Rank	*H*	*gl*	*p*	e²
Artificial intelligence	First year	674	1132.80	5.952	4	.203	.016
	Second year	639	1176.13				
	Third year	500	1203.94				
	Fourth year	269	1227.11				
	Fifth year	254	1112.19				
Attitudes towards research	First year	674	1199.91	10.467	4	.033	.016
	Second year	639	1147.29				
	Third year	500	1159.18				
	Fourth year	269	1107.58				
	Fifth year	254	1221.37				

Note: N= sample; H = Kruskal Wallis statistic: p = significance (0.05); ε^2 = Epsilon-squared (effect size).

Discussion

The results obtained in this study show that there is no significant relationship between artificial intelligence (AI) and attitudes towards research in university students, considering various socio-academic variables. This finding contrasts with the expectation that AI in academia will directly influence students' motivation and perception of research.

Although previous research has highlighted the potential of AI to improve access to information and optimize analytical processes in research (Zawacki-Rochter et al., 2019); Pérez & Zambrano, 2024), the data suggest that its use does not significantly impact students' interest or commitment to research activity.

One possible explanation for this lack of relationship is that, while AI provides tools to facilitate connection and data analysis, it does not replace fundamental elements such as intellectual curiosity, critical thinking, and training in methodology, essential factors for the development of a favorable attitude towards scientific research.

According to Ramírez and Flores (2019), interest in research is built through significant educational experiences, beyond the availability of technological tools. In this sense, the use of

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AI by students may respond more to a need than to a change in their perception of research.

Likewise, it was observed that socio-academic variables, such as the year and area of study, age, sex and occupation, as well as the degree of relationship with technology, did not exert a significant influence on the relationship between AI and attitudes towards research; this coincides with the findings of Holmes et al. (2022), who argue that the disposition towards research is more linked to motivational and pedagogical factors than to the availability of advanced technological tools. Therefore, in some disciplines where research is part of the compulsory curriculum, students can develop both positive and negative attitudes towards this activity, without AI playing a determining role in their perception.

Another factor to consider is the diversity of opinions among students regarding the role of AI in the research process. While some perceive it as a useful resource, others consider it a complement that does not substantially modify their interest or motivation for research. This reinforces the idea that the use of AI is not sufficient by itself to generate changes in research attitudes but must be integrated into educational strategies that promote autonomy, critical thinking, and interest in the production of knowledge (Rodríguez & Pérez, 2022).

From a pedagogical perspective, these results suggest that the incorporation of AI in research teaching should be accompanied by didactic approaches that strengthen students' analytical and reflective skills. Although technology can facilitate certain aspects of the research process, its use does not guarantee a positive impact on attitudes towards research. Therefore, it is essential for higher education institutions to design teaching strategies that combine the use of AI with active learning methodologies, thus promoting the development of critical thinking and interest in scientific inquiry (Gonzales & Torres, 2021).

With respect to the results of attitudes towards research, it is specified that the findings of this study reveal that 46% of university students manifest negative attitudes, evidencing an unfavorable or limited perception regarding this academic activity. This situation is worrying, given that research is a necessary skill in higher education, because it increases problem-solving skills and contributes to generating new knowledge (Palacios, 2021).

Likewise, a possible unfavorable cause is the perception of research as a difficult and demanding process, many students consider it an activity that requires considerable effort, especially if they have not received adequate methodological training or teaching accompaniment that facilitates their understanding (Gonzales & Torres, 2021). In addition, the lack of motivation may be related to previous experiences in methodology courses, where teaching tends to focus on theoretical aspects rather than practical approaches that allow for greater application (Rojas-Solis et al., 2021).

And another relevant factor is the academic load and access to resources. Previous research has indicated that students who perceive research as an additional task within their study plan tend to develop negative attitudes towards it. Likewise, the difficulty in accessing scientific databases, specialized software, and adequate spaces for research can generate frustration and decrease interest in the development of research projects (Olivera, 2020).

In addition, it was found that students in the last years of study have more favorable attitudes towards research, as they advance in their studies, students acquire greater knowledge and skills in research. A possible reason for this trend is the need to carry out final degree or thesis projects, which forces students to get involved with research, in this sense, research is no longer perceived as an abstract requirement and becomes a practical and necessary tool for the culmination of

their academic training (Obermeier, 2019).

During the development of the research, some limitations were presented, such as the sample was made up of students from different universities, limiting the generalization of the results to other institutions with different academic and contextual characteristics. Another limitation is the cross-sectional design, which prevents establishing causal relationships between the study variables, because the data collected occurred at a certain time, limiting the possibility of analyzing how these attitudes may change over time or in response to different academic experiences. Finally, the study was carried out in a specific context of integrating artificial intelligence into education, but the speed with which technologies evolve may cause the results to vary in the future.

Conclusions

The absence of a significant relationship between the use of AI and attitudes towards research indicates that the availability of technological tools is not sufficient to motivate research interest in university students.

To achieve a positive impact, it is necessary to strengthen the teaching of research through training experiences that stimulate curiosity, autonomy and commitment to the generation of knowledge.

From the educational field, these results underline the importance of implementing pedagogical strategies that promote a positive attitude towards research. It is essential that universities improve pedagogical approaches to generate a scientific profile in students and promote scientific production on a large scale.

The relationship between progress in university education and a more positive attitude towards research highlights the importance of experience and progressive exposure to this activity. Strengthening training processes from early stages could help a greater number of students develop interest and motivation for research throughout their academic career.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The data supporting the findings of this study are available on request from the corresponding author. Due to the nature of this research, participants were not asked for permission to share their data publicly, so supporting data is not available.

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