The Impact of Using Artificial Intelligence Techniques on the Level of Academic Performance Among Students : « A Field Study at the Faculty of Economic, Commercial, and Management Sciences – Ahmed Zabana University of Relizane »

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Abstract:

This study aims to Uncover the impact of using Artificial Intelligence (AI) techniques - modelled through three dimensions (Research & Inquiry Support, Educational Support & Idea Generation, and Writing & Editing Assistance) - on the academic performance levels of students at the Faculty of Economic, Commercial, and Management Sciences, Ahmed Zabana University, Relizane. Adopting a descriptive-analytical approach, data were gathered via an electronic survey administered to a random sample of students.

The results indicate a significant surge in AI adoption among students, predominantly driven by generative tools like ChatGPT. The findings also reveal a statistically significant positive correlation between AI use and academic achievement, with Educational Support & Idea Generation emerging as the most influential dimension, followed by Writing assistance and Research support. The study concludes that AI serves as a smart technological mediator requiring structured integration to ensure the quality of scientific output. It recommends formalizing the use of these technologies and enhancing student training to foster responsible engagement and maintain academic integrity.

Keywords: Artificial Intelligence Techniques; Academic Performance; Higher Education; Relizane University; Digital Transformation.
Jel Classification Codes: I21, I23, O33.

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1. INTRODUCTION

Higher education and scientific research stand at a decisive crossroads shaped by the accelerating rise of Artificial Intelligence (AI) technologies. As these tools evolve, they transition from peripheral aids to core structural components of the educational process, necessitating a re-evaluation of how knowledge is accessed and performance is measured. In the Algerian university context, this transformation is a lived reality calling for rigorous empirical scrutiny.

The global scholarly record points unambiguously to this shift**. (Wang & Fan, 2025)**, documented a substantial positive effect of AI models - most notably ChatGPT - on students' educational performance and higher-order thinking skills. In parallel, (Gabay & al, 2026) found that these tools function as genuine cognitive scaffolds, strengthening idea organisation and linguistic fluency, whilst urging universities to develop regulatory frameworks that position AI as a complement to human intellect. However, a balanced perspective requires acknowledging potential risks; over-reliance on AI may impact critical thinking and academic integrity if not managed within ethical boundaries.

Within the Algerian context, evidence is accumulating. Recent studies conducted within the national framework have emphasized that adopting AI applications is a top priority for over 81% of academic staff to ensure educational quality (Kebdani & Baden, 2021) (Lador, 2024) found a strongly positive inclination among students at the Faculty of Economic Sciences, Bordj Bou Arréridj University, to integrate AI chatbots into their academic routines. Similarly, (Mihoub & Boumjeria, 2026), confirmed this optimism at Tébessa University, where students expressed enthusiasm for using AI in dissertations for time efficiency and research quality, despite challenges like insufficient training and costs.

Yet, an important knowledge gap persists; existing local studies have largely remained at the level of attitudes or perceptions. The question of whether AI use translates into measurable improvements in academic achievement has not been empirically resolved in the Algerian context, particularly at the Faculty of Economic, Commercial and Management

Sciences, Ahmed Zabana University, Relizane. Students there face growing pressures and turn to AI as a strategic recourse. The core concern is the absence of evaluative frameworks capable of converting this reliance into a genuine driver of academic quality.

Accordingly, the central question is: what is the impact of using AI applications on the academic performance of students at the Faculty of Economic, Commercial, and Management Sciences, Relizane University, from their own perspective? This study addresses three sub-questions: the current level of AI use, the correlation between this use and performance, and which dimension-Research & Inquiry Support, Educational Support & Idea Generation, or Writing & Editing Assistance-carries the strongest effect. To guide this, two main hypotheses are advanced: first, that there is a statistically significant effect ($\alpha \leq 0.05$) of AI technology use on academic performance; and second, that there is a statistically significant positive correlation between these dimensions and performance.

The study pursues four objectives: mapping AI uptake, examining differences according to student characteristics (gender, age, academic level), investigating AI's contribution to research outputs (specifically dissertations), and documenting technical obstacles. The significance of this work lies in contributing to Arabic-language academic literature, providing evidence-based data for administrators at Ahmed Zabana University, and highlighting the need for structured training initiatives.

Two key variables structure the empirical design. The independent variable (AI technology use) covers platforms like ChatGPT across three functional dimensions measured through the first axis of the questionnaire. The dependent variable (academic performance) refers to achievement levels captured through the second axis, including grade improvement and task completion speed. A critical reading of prior literature reinforces this investigation's originality; while international studies (Wang & Fan, 2025); (Gabay & al, 2026) focus on cognitive outcomes and local studies (Lador, 2024); (Mihoub & Boumjeria, 2026) survey attitudes, this study fills the

gap by providing a field-based statistical measurement of the actual effect on achievement in the specific institutional setting of Relizane.

2. Part One: Theoretical Framework

This section establishes the conceptual foundations of AI technologies and explores their evolving role as catalysts for academic performance within the digital transformation of higher education.

2.1 AI Technologies and Their Importance in Higher Education

The integration of AI into university settings necessitates a clear understanding of its technical nature and the multifaceted value it provides to both students and educators.

2.1.1 Concept of AI Technologies

AI applications in the field of higher education encompass diverse tools, such as Bing AI Chat and Midjourney from Microsoft, BARD (now Gemini) from Google, and other generative AI tools that impact higher education such as Synthesia - a video generation tool - and Amper Music, which enables the rapid and easy creation of musical pieces (Lee & al, 2024, p. 1). Despite the technical diversity between visual and auditory media, the core impact of these tools in the Algerian university environment is concentrated primarily in text-generative capabilities, which have become the essential pillar for assisting students in daily academic research tasks.

These technologies also refer to the infrastructures that support AI applications designed to produce new content (text, images, or code) rather than merely analysing existing data, relying on deep learning systems trained on large datasets and adaptable to numerous tasks (Gabay et al, p. 201). Based on the foregoing, we conclude that AI has become an assistive tool in academic work; its capacity to organise and generate content is changing the student's role from a mere seeker of information to a reviewer and evaluator of it, to ensure the quality and accuracy of the results obtained.

2.1.2 Importance in Higher Education

AI has become a powerfully present entity in modern societies, and its use is no longer confined to marketing, design and entertainment its influence has extended deeply into the higher education sector. This

presence was reinforced especially after the COVID-19 pandemic, which accelerated the pace of virtual learning, followed by the launch of generative AI tools such as ChatGPT, which constituted a genuine leap in this field (Lee et al, pp. 2–9). The importance of these tools is evident in their ability to save time and improve the efficiency of big data analysis, as well as their role in helping students draft articles and reports within the bounds of academic integrity. With the increasing integration of AI in teaching and research, new pedagogical possibilities have emerged, whilst simultaneously raising serious concerns about ethical assessment and information security (Dai & al, 2026, p. 1).

The real challenge in the university environment lies not only in how to access the technology, but in balancing research speed with scientific integrity. In the face of these challenges, the need to adopt digital tools-which have become an integral part of improving access to education and enhancing learning outcomes-has emerged (Haleem & al, 2022, p. 1). In this context, AI platforms have proven their ability to support students and teachers through automating routine tasks and personalising educational content to suit each learner's needs (Gomez & Saenz, 2025, p. 128). (Gabay & al, 2026) also noted that these tools are now widely used for idea generation, paraphrasing, and summarising prior studies, which has reshaped the way students engage with academic writing. Based on the foregoing, this transformation clearly indicates a shift in the student's role from a passive recipient of information to an intelligent interlocutor with technology-which the present study aims to evaluate in terms of its effect on actual academic performance (Gabay & al, p. 201).

Based on the multiple functions provided by AI in education, this study focused on three core dimensions that represent the essence of academic use among students: (1) Research & Inquiry Support, which facilitates access to sources; (2) Educational Support & Idea Generation, which helps in understanding complex concepts; and (3) Writing & Editing Assistance, for refining linguistic formulation. Together, these dimensions

constitute the independent variable whose effect on academic performance will be measured in the applied section of the study.

Furthermore, the adoption of AI in education is often interpreted through established frameworks such as the Technology Acceptance Model (TAM), which suggests that perceived usefulness and ease of use are primary drivers of student engagement. Additionally, the Unified Theory of Acceptance and Use of Technology (UTAUT) provides a distinct format for understanding how social influence and facilitating conditions shape the shift toward AI-mediated learning.

2.2 Academic Performance Level in the Age of Digital Transformation

Evaluating academic success in the modern era requires a shift from traditional grading systems to more comprehensive indicators that reflect digital fluency.

2.2.1 Academic Performance Level

Academic performance refers to the level of achievement attained by a student in their educational journey. It is objectively measured usually through the Cumulative Grade Point Average (CGPA), which is the evaluation system adopted in educational institutions to measure a student's overall academic performance during a semester or academic year (Abbas & al, 2024, p. 6). Nevertheless, digital transformation compels us to reconsider academic performance not merely as quantitative grades, but as a cumulative process influenced by the quality of assistive technical tools.

2.2.2 Modern Performance Indicators

These indicators are an important cornerstone reflecting the quality of teaching and educational capacities, evaluating the academic levels of faculties and universities (Liu & al, 2022, p. 1). Contemporary indicators now transcend traditional test scores to include measures of interaction, participation rates, systematic knowledge retrieval, task completion speed, and personalised learning enhancement (Kwak, 2025, p. 236).

In this context, (Chen, 2025, p.449) argues that modern performance indicators include higher-order thinking, collaboration, and self-regulation (Mishra, 2025) adds that student understanding and academic attainment

can be improved through personalised learning experiences, immediate feedback, and digital resource access (Mishra, 2025, p. 2549).

From these perspectives, speed of completion and personalised learning have become two fundamental pillars of academic performanceintersecting directly with generative AI outputs that provide a personalised learning environment beyond traditional study boundaries

2.3 The relationship between ai technologies and academic achievement

The correlation between technological assistance and achievement levels remains a focal point of contemporary pedagogical debate, balancing efficiency with intellectual rigor.

Universities bear the responsibility of equipping students with modern educational tools and responding to rapid technological developments, including AI as a contributor to equitable education. Optimistic viewpoints highlight AI's capacity to provide comprehensive curricula that positively influence creativity and self-confidence, with studies proving it an effective tool for improving the learning process (Lee et al, p. 2).

In the same framework, (Abbas et al., 2024) indicated that generative AI helps manage heavy academic workloads under time constraints, while highlighting the necessity of raising awareness of over-reliance risks. Students are encouraged to use AI as a supplementary resource that nurtures intellectual effort rather than a substitute, promoting a comprehensive learning approach (Abbas et al, p. 18).

According to (Gomez & Saenz, 2025), these tools help students aggregate and summarise vast data, contributing significantly to improved academic writing. They provide diverse support as personal tutors and collaborative assistants in idea generation, ultimately leading to more personalised learning outcomes (Gomez & Saenz, pp. 128–130).

To explore the direct relationship with attainment, (Samo et al., 2025) demonstrated that reliance on AI bridges individual learning gaps, leading to tangible improvement in the cumulative GPA of students who use it to overcome learning difficulties (Samo & al, 2025, p. 899).

Based on the foregoing, it can be concluded that AI has transitioned from a technical option to a necessity for academic excellence, provided students have sufficient awareness to direct these tools towards improving scientific outputs rather than merely consuming ready-made content.

2.4 Students' Motivations for Using AI Tools and Their Reflection on Performance

Understanding why students turn to AI is essential for contextualizing its impact on their final academic outputs and motivation levels.

In the context of studies on students' use of AI tools, several key motivations have been identified. Most prominent are time pressure and the demands of intensive academic work, which drive students towards using chatbot programmes such as ChatGPT. Nevertheless, this usage is expected to lead to divergent consequences: on one hand, it may negatively affect academic integrity and weaken achievement motivation if relied upon entirely without critical thinking; on the other hand, if students utilise the acquired information to improve their understanding of the subject matter, it may positively impact their performance through refining analytical skills and deepening knowledge (Abbas et al. pp. 2–6).

In addition, the characteristics of AI reinforce students' inclination towards these tools due to the breadth of information and the speed of personalised feedback. Studies have proven that factors such as perceived usefulness and the ability to improve writing level and language give students a greater sense of readiness and confidence in their studies (Gomez & Saenz, p. 129). According to (Benedek & Sziklai 2025), students' reliance on generative AI globally is increasing to complete assignments and achieve higher grades a 2025 survey showed that 85% of students in the United States use these technologies, confirming their tangible positive effect on improving overall educational performance (Benedek & Sziklai, 2025, p. 1).

This trend is clearly evident in the local university environment, where the motivations of Algerian students intersect with global trends in terms of the desire to improve research outputs while saving time and effort - as confirmed by (Mihoub & Boumjeria 2026), which revealed a positive

attitude among graduating students towards using these applications in preparing their dissertations (Mihoub & Boumjeria, 2026p. 211). (Lounansa 2024) also recorded the attitudes of Algerian researchers towards using AI technologies as an integral part of current and future scientific research (Lounansa, 2024, p. 524). In the same vein, (Ben Larbi & Bziaz 2025) demonstrated students' extensive reliance on these tools to achieve quality standards in the educational process (Ben Larbi & Bziaz, 2025, p. 1110). This reflects Algerian students' awareness of the added value of these tools and their clear inclination to adopt them in their academic careers - which makes the present study a scientific necessity for measuring the impact of this adoption empirically and determining the extent of its actual contribution to improving academic performance.

3. Methodological Procedures of the Field Study

This section outlines the practical framework of the study, detailing the methods used to measure the impact of AI on student achievement.

3.1. Study Methodology

Based on the nature of the stated objectives and hypotheses, the study adopted the descriptive-analytical approach through monitoring the reality of AI technology use and testing statistical relationships to interpret the effect of these technologies on educational outputs (academic performance) among students. This methodology is the most appropriate for describing the study phenomenon, from quantitative description to interpreting the links and effects between variables.

3.2. Study Population and Sample

The study population comprises all students at the Faculty of Economic, Commercial and Management Sciences, Relizane University, registered for the 2025/2026 academic year. Given the difficulty of a comprehensive enumeration of the original population, a random sample of 160 male and female students from different academic levels and specialisations within the faculty was drawn, The sample was selected using a simple random sampling technique to ensure that every student in the

faculty had an equal chance of participation, thereby reducing selection bias and lending the results an appropriate capacity for generalisation.

3.3. Data Collection Instrument

To collect primary data, an electronic questionnaire directed at students was developed and designed in three main parts:

Part One: Dedicated to collecting personal and demographic data (gender, age, academic level, etc.).

Part Two: Aimed at measuring the use of AI technologies (independent variable) through three main dimensions: Research & Inquiry Support, Educational Support & Idea Generation, and Writing & Editing Assistance.

Part Three: Dedicated to measuring the academic performance level (dependent variable).

This instrument was built by drawing on the theoretical frameworks of prior studies, particularly Wang & Fan (2025) regarding academic performance dimensions, and Gabay et al. (2026) regarding academic writing assistance, in addition to other studies (Lee et al., 2024; Gomez & Saenz, 2025), with the items adapted operationally to suit the Algerian university environment and the specific context of the Faculty of Economic Sciences under study.

3.4. Statistical Methods

To process the data and test the hypotheses, the Statistical Package for the Social Sciences (SPSS V.26) was employed, using Cronbach's Alpha test, Descriptive methods (frequencies, percentages, and means), Pearson Correlation coefficient and Multiple Linear Regression.

Prior to the regression analysis, the underlying assumptionsincluding normality, linearity, and the absence of multicollinearity were verified to ensure the robustness and reliability of the statistical inferences.

4. Presentation and Discussion of Field Study Results

The following analysis provides an empirical evaluation of the data collected, highlighting the patterns of AI adoption and its subsequent impact.

4.1. Characteristics of the Study Sample

To describe the study sample of **160 students**, frequencies and percentages were extracted for personal variables as shown in the following table:

Table 1. Characteristics of the Study Sample

Variable	Category	Frequency	Percentage (%)
Gender	Male	41	25.6%
	Female	119	74.4%
	Total	**160**	**100%**
Age Group	Under 25 years	137	85.6%
	25 to 30 years	15	9.4%
	31 years and above	08	5.0%
	Total	**160**	**100%**
Academic Level	Bachelor's (Licence)	94	58.8%
	Master's	60	37.5%
	Other	6	3.8%
	Total	**160**	**100%**

Source: Compiled by the researcher based on SPSS V.26 results

It is observed from the table above that the dominant group in the sample is **female** students, at a rate of **74.4%**, a result that reflects the actual demographic characteristics of students at the Faculty of Economic, Commercial and Management Sciences, Relizane University. It is also found that the majority of surveyed students belong to the **under-25 age** group, at **85.6%**, indicating that the sample consists of the digital generation, which is the most open and capable of absorbing and employing modern technologies. In terms of academic level, Bachelor's **(Licence)** students represented the largest proportion at **58.8%**, followed by **Master's** students at **37.5%.**

Having identified the demographic characteristics of the sample, the following table presents the extent to which these students have adopted AI technologies in their academic practices:

Table 2: AI Usage Habits

Variable	Category		Frequency	Percentage (%)
Use of AI Tools	Yes		154	96.3%
	No		6	3.8%
	Total		**160**	**100%**
Most Used Tools	Quillbot/Grammarly	Yes	10	6.3%
		No	150	93.8%
		Total	**160**	**100%**
	DeepSeek	Yes	37	23.1%
		No	123	76.9%
		Total	**160**	**100%**
	Gemini	Yes	88	55.0%
		No	72	45.0%
		Total	**160**	**100%**
	ChatGPT	Yes	137	85.6%
		No	23	14.4%
		Total	**160**	**100%**
	Other tools	Yes	5	3.1%
		No	155	96.9%
		Total	**160**	**100%**
Usage Frequency	Daily		43	26.9%
	Weekly		21	13.1%
	Only when needed (exams/research)		96	60.0%
	Total		**160**	**100%**

Source: Compiled by the researcher based on SPSS V.26 results

Results show that the adoption of these technologies by students in their academic journey reached a high rate of **96.3%**, indicating widespread diffusion of these tools in the university environment under study. It is also clear that **ChatGPT** is the most used tool at **85.6%**, followed by **Gemini at 55%**, indicating students' considerable reliance on generative language models in their academic practices.

Regarding the usage frequency, **60%** of **students** resort to these tools only when needed (related to examinations and research). This result clearly indicates that AI is used as a functional support tool to complete required academic tasks rather than as an ongoing daily habit for the majority, which directly links its use to academic performance and achievement.

4.2 Testing the Validity and Reliability of the Study Instrument

To ensure that the data collected is both consistent and accurate, it is essential to evaluate the psychometric properties of the questionnaire before proceeding to hypothesis testing.

To verify the suitability of the instrument (questionnaire) for data collection and to statistically ensure the reliability of the results, the researcher conducted reliability and validity tests using Cronbach's Alpha coefficient and content validity. The results are presented in the following table:

Table 3: Cronbach's Alpha Coefficient for Measuring the Reliability of Study Axes

Dimension	No. of Items	Cronbach's Alpha (α)	Content Validity*
Research & Inquiry Support	05	0.677	0.823
Educational Support & Idea Generation	05	0.738	0.859
Writing & Editing Assistance	04	0.856	0.925
Axis 1: AI Applications Use (Total)	**14**	**0.870**	**0.933**
Axis 2: Academic Performance	**11**	**0.915**	**0.957**
Overall Questionnaire	**25**	**0.935**	**0.967**

Source: Compiled by the researcher based on SPSS V.26 results

It is clear from the table results that the reliability coefficient **(Alpha)** values for the dimensions ranged between 0.677 and 0.915, whilst the overall questionnaire value reached **0.935**. These values reflect high internal consistency, as they exceed the statistically acceptable threshold of 0.60. The high Alpha value for the overall questionnaire (0.935) confirms that the items are closely related as a group, providing a solid foundation for reliable statistical inference.

The results also confirm the quality of the instrument through content validity values that totalled 0.967, indicating that the questionnaire possesses a high degree of stability and the ability to measure the study variables accurately. Based on these positive statistical indicators, the instrument is considered valid and reliable for proceeding to data analysis and hypothesis testing.

4.3 Presentation and Analysis of Sample Members' Views on Study Variables

This section examines the descriptive statistics of the study variables, providing an overview of students' perceptions regarding AI utility and their own academic achievement.

To identify the level of AI technology use and the academic performance level among sample members, means and standard deviations were used, with results interpreted according to the five-point Likert scale, as shown in the following table:

Table 4: Means and Standard Deviations for Study Dimensions

Rank	Dimension / Axis	Mean	Std. Dev.	Level
1	**Research & Inquiry Support**	4.11	0.577	Very High*
2	**Educational Support & Idea Generation**	3.92	0.613	High*
3	**Writing & Editing Assistance**	3.67	0.856	High*
–	**Independent Variable: AI Applications Use**	3.90	0.573	High*
–	**Dependent Variable: Academic Performance Level**	3.82	0.695	High*

Source: Compiled by the researcher based on SPSS V.26 results

Results in the table indicate a strong positive inclination among Relizane University students towards using AI tools, with the independent variable (AI Applications Use) achieving an overall mean of **3.90** rated (High). The Research & Inquiry Support dimension ranked first with a mean of **4.11**, reflecting the fundamental role of these technologies as an advanced research tool that students found to be an effective means of overcoming traditional research obstacles. This high ranking suggests that students primarily view AI as a sophisticated search engine and resource aggregator, which facilitates the preliminary stages of academic inquiry.

Second came the **Edu**cational Support & Idea Generation dimension with a mean of **3.92**, whilst the Writing & Editing Assistance dimension ranked third with a mean of **3.67**. Regarding the dependent variable (Academic Performance Level), it recorded a mean of **3.82**, confirming students' perception of the tangible effect of these technologies on the quality of their achievement and scientific outputs. The convergence of these means indicates a balanced integration of AI across different academic tasks, suggesting that students are moving beyond mere adoption toward functional utilization to enhance their educational outcomes. It is also noteworthy that all standard deviations were low and below one (ranging between **0.57 and 0.85**), confirming the existence of high homogeneity and convergence in the opinions of sample members, proving

the lack of dispersion in their responses, which lends high credibility to these results in the university environment under study.

4.4 Testing Study Hypotheses

This section presents the empirical findings regarding the research hypotheses, utilizing both correlational and predictive statistical techniques to determine the strength and direction of the relationship between AI use and student performance.

To verify the validity of the study's main hypotheses, the Pearson Correlation coefficient was used to determine the nature of the relationship, and the Multiple Linear Regression method to measure the predictive power and the extent of the independent variable's contribution to explaining the changes in the dependent variable. Results were as follows:

4.4.1 Testing the Correlation Hypothesis (Main Hypothesis 1)

Main Hypothesis 1: There is a statistically significant correlation at a significance level of ($\alpha \leq 0.05$) between the use of AI technologies and the academic performance level of students at the Faculty of Economic, Commercial and Management Sciences, Relizane University.

Table 5: Pearson Correlation Matrix of Variables

Variable	(1)	(2)	(3)	(4)	(5)
(1) Research & Inquiry Support	**1**				
(2) Educational Support & Idea Generation	0.568**	**1**			
(3) Writing & Editing Assistance	0.459**	0.625**	**1**		
(4) AI Use (Overall)	0.767**	0.859**	0.875**	**1**	
(5) Academic Performance Level	0.567**	0.705**	0.630**	0.756**	**1**

Source: Compiled by the researcher based on SPSS V.26 results

Through the analysis of data in Table 5, a strong, statistically significant positive correlation exists between AI technology use and the academic performance level, with the Pearson correlation coefficient reaching **(R = 0.756)** at a significance level of **(Sig = 0.000)**. The strength of this correlation (0.756) indicates that AI is no longer a peripheral tool but

a central catalyst in the students' educational ecosystem. It is also noted that the Educational Support & Idea Generation dimension was the most correlated with academic performance **(0.705)**. This suggests that the cognitive interaction with AI-specifically for brainstorming and conceptual understanding-yields a higher academic return than using it for mere data retrieval or basic editing. Based on the above, **Main Hypothesis 1** is **accepted**.

4.4.2 Multiple Linear Regression Analysis Results (Main Hypothesis 2)

Main Hypothesis 2: There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) of using AI technologies, across their various dimensions, on the academic performance level of students at the Faculty of Economic, Commercial and Management Sciences, Relizane University.

To test this hypothesis, the Multiple Linear Regression method was used, with results shown in the following table:

Table 6: Model Summary & ANOVA

Variables	R	R^2	F (Calculated)	Sig.
Independent Variable (Overall) → Academic Performance Level	0.764	0.583	72.686	0.000

Source: Compiled by the researcher based on SPSS V.26 results

From Table 6, the **F value** reached **72.686**, which is statistically significant at the **0.000** level, confirming the quality and validity of the model for testing the effect. The coefficient of determination also reached **(R^2 = 0.583)**, meaning that the AI dimensions explain **58.3%** of the variance in students' academic performance. This explanatory power is considered substantial in social sciences, indicating that nearly sixty percent of the improvement in student achievement at Relizane University can be attributed to their proficiency in utilizing AI tools. Based on this, **Main Hypothesis 2** is **accepted**.

Sub-Hypothesis Analysis (Effect Coefficient Analysis)

The effect of each dimension separately, as shown in the coefficients table, is as follows:

Table 7: Multiple Regression Analysis Results (Overall Effect Model)

Hypothesis	Independent Variable Dimension	β	t	Sig.	Result
Sub-1	Research & Inquiry Support → Academic Performance	0.204	3.201	0.002	Accepted
Sub-2	Educational Support & Idea Generation → Academic Performance	0.416	5.745	0.000	Accepted
Sub-3	Writing & Editing Assistance → Academic Performance	0.277	4.122	0.000	Accepted

Source: Compiled by the researcher based on SPSS V.26 results

Sub-Hypothesis 1: Results indicate a statistically significant effect of the Research & Inquiry Support dimension on academic performance, with a regression coefficient of **(β = 0.204)**, a t-value of **(t = 3.201)**, significant at **(Sig = 0.002)**, which is less than 0.05 therefore **Sub-Hypothesis 1** is **accepted**.

Sub-Hypothesis 2: Results showed that the Educational Support & Idea Generation dimension is the most impactful on students' academic performance, recording the highest regression coefficient of **(β = 0.416)** and a high t-value (**t = 5.745)**, significant at **(Sig = 0.000)** - therefore **Sub-Hypothesis 2** is **accepted**.

Sub-Hypothesis 3: Results revealed a statistically significant effect of the Writing & Editing Assistance dimension on academic performance, with a regression coefficient of **(β = 0.277)** and **(t = 4.122)**, significant at **(Sig = 0.000)** - therefore **Sub-Hypothesis 3** is **accepted**.

The statistical results confirm that the use of AI technologies across their three dimensions effectively and positively contributes to enhancing the academic performance level of students at the Faculty of Economic, Commercial and Management Sciences, Relizane University. Notably, the dominance of Educational Support (β = 0.416) over other dimensions highlights a shift toward "AI-assisted learning" where the technology acts as a virtual tutor that bridges the gap between complex theoretical concepts and student comprehension. This strong effect is attributed primarily to the capacity of these technologies to provide educational support and generate innovative ideas for students, facilitating the assimilation of scientific

subjects and developing analytical capacities, followed by the effect resulting from assistance in writing and editing research papers, then support for research and inquiry processes.

5. Discussion and Interpretation of Results

5.1 Interpretation of Main Hypothesis 1 (Correlation Relationship)

Results showed a strong positive correlation **(R = 0.764)** between the use of AI technologies and the academic performance level. It was also found that the proposed model explains **58.3%** of the changes in academic performance. This reflects the reality of the faculty under study, where the adoption of AI tools (such as ChatGPT, Gemini, etc.) has become a necessity imposed by the nature of **economic specialisations**, which require speed and accuracy in data processing - positively reflecting on academic achievement.

5.2 Interpretation of Main Hypothesis 2 (Effect Relationship)

5.2.1 Effect of the Research & Inquiry Support Dimension: Despite ranking third statistically with a regression coefficient of ($\beta = 0.204$), it remains a significant effect reflecting a transformation in the methodology of accessing information among students at the Faculty of Economic Sciences, Relizane University. This result is consistent with Ben Larbi & Bziaz (2025) in that AI transitions the student's role from information gatherer to information analyser. Moreover, intersects with Gomez & Saenz (2025) results that these tools give students additional time to focus on analytical aspects rather than exhausting effort in collecting data through traditional methods making students' academic performance more flexible and responsive to the requirements of digital transformation.

5 .2. 2 Effect of the Educational Support & Idea Generation Dimension: This dimension ranked first in terms of impact ($\beta = 0.416$), attributable to students' pressing need at the Faculty of Economic Sciences, Relizane University, for tools that help them deconstruct complex research problems. AI functions here as an intelligent assistant that simplifies concepts and reduces the cognitive gap. This view aligns with Gomez & Saenz (2025)

who argued that these tools enhance innovative capacities without compromising academic integrity.

5.2.3 Effect of the Writing & Editing Assistance Dimension: This ranked second with a regression coefficient of ($\beta = 0.277$), explained by students' need to improve the quality of their reports, especially when dealing with economic terminology in foreign languages. This result is consistent with Gabay et al. (2026), which confirms that AI raises linguistic fluency and efficiency, ensuring quality in the final output and raising overall academic performance.

It is clear from the above that the results of this study are consistent with global and local trends that have proven the transformative role of AI in higher education. The acceptance of all study hypotheses confirms that these technologies have become a key driver for raising the achievement efficiency of students at the Faculty of Economic Sciences, Relizane University indicating that the local university environment is experiencing a phase of effective digital transformation, integrating the student's personal skills with machine intelligence to ensure sustained academic excellence.

6. Conclusion

This study was conducted at Ahmed Zabana University in Relizane, through surveying the opinions of students at the Faculty of Economic, Commercial and Management Sciences on the impact of AI technologies on their academic performance level. It represents a scientific attempt to explore the transformative role played by these technologies in the Algerian university environment. Statistical analysis showed a leap in the adoption of these tools, with a usage rate of 96.3%, with a clear dominance of ChatGPT as the primary tool.

The study concluded that AI has transcended being a mere technical means to become a smart technological mediator and strategic driver that explains approximately 58.3% of the variance in students' academic performance. This result proves that the conscious integration of these technologies in the areas of research, knowledge generation, and academic

editing represents a qualitative leap contributing to reducing skills gaps and supporting innovation, provided that the principles of academic integrity and critical awareness are upheld in the context of the digital transformation witnessed by the university.

Recommendations

Based on the field findings of the study, the following recommendations are proposed:

– Organising regular AI training sessions targeted for the Faculty of Economic Sciences, focusing on professional applications in econometric and economic analysis.

– Developing a faculty-level guide that defines AI usage parameters in dissertations to leverage editing and idea generation while upholding academic integrity.

– Encouraging professors to prioritize critical thinking and analytical discussion in assessments, shifting the student's role from a mere information conveyor to an active analyzer.

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