



The effect of artificial intelligence (AI) intensity on students satisfaction in completing college assignments

Zahrotunnisa Siswahyuningsih¹, Aini Mahfudhoh²

Correspondence:

zahronisa297@gmail.com

Affiliation:

Magister of Islamic Education
Management, Universitas Islam
Negeri Sayyid Ali Rahmatullah
Tulungagung, Indonesia¹

zahronisa297@gmail.com

Magister of Islamic Education
Management, Universitas Islam
Negeri Sayyid Ali Rahmatullah
Tulungagung, Indonesia²

ainimahfudhoh2017@gmail.com

Abstract

The rapid development of AI is influenced by the intensity of its use and the benefits felt by its users. The widespread use of AI without a foundation in literacy and the buying and selling of AI prompts have weakened critical thinking skills. This phenomenon has sparked interest in researching the intensity of AI use among college students. This study aims to analyze the effect of AI usage intensity on college student satisfaction in completing college assignments. This quantitative research uses an explanatory associative research method with simple linear regression analysis to test the independent variable (AI usage intensity) and the dependent variable (usage satisfaction). Data collection was conducted via an online questionnaire On Google Forms for master's students in the Islamic Education Management study program in Tulungagung Regency, with a total of 60 respondents. The results showed a linear relationship between the intensity of AI use and college student satisfaction with completing college assignments. The findings indicated that a one-unit increase in AI use intensity would increase student satisfaction by 0.466 units. The effect of AI usage intensity, as measured by the coefficient of determination, is 26.9% on student satisfaction with completing course assignments. This study concludes that the intensity of AI usage among college students must be regulated immediately so that satisfaction in completing course assignments is accompanied by academic competence and ethics.

Keywords:

Intensity of Use; Artificial Intelligence; Satisfaction of Use;
College Students

A. INTRODUCTION

The development of Artificial Intelligence (AI) technology over the past few years has revolutionized almost every aspect of life, including higher education. Since the emergence of general AI models such as ChatGPT (OpenAI), Gemini (Google), and Copilot (Microsoft), college students have instant access to intellectual resources that can help them understand, write, and complete academic assignments efficiently (Dwivedi et al., 2021). In the context of education, AI has become a new learning partner capable of providing quick feedback, writing suggestions, and data-driven solutions for various academic problems (Zawacki-Richter, Marín, Bond, & Gouverneur, 2019). However, this convenience also raises ethical and pedagogical concerns: do college students truly understand the material they are working on, or are they merely passive users of the generative results of intelligent machines? This phenomenon highlights the urgent need to understand the intensity of AI use in academic processes and its impact on student satisfaction as users.

Intensive use of AI can increase perceived ease of use and perceived usefulness, as described in the Technology Acceptance Model (TAM) developed by Davis (Fred D. Davis, 1989). Students who frequently use AI may experience greater time efficiency, faster access to information, and more structured task results. However, excessive use without adequate AI

literacy can lead to intellectual dependency and a decline in critical thinking skills (Miao & Holmes, 2024). Many students now purchase prompts or copy AI results without analytical effort, which is contrary to the principle of meaningful learning. A prompt is a text-based command or request used to communicate with an AI system. It requires strategy in crafting prompts so that search results are accurate and in-depth, given the context (Hibatulwafi & Laksmi, 2024). AI has made human work easier, so the composition of these prompts should be a medium for honing critical and systematic thinking skills. The tension between instrumental benefits and cognitive risks makes the intensity of AI usage a crucial variable for empirical research, particularly in relation to student satisfaction in completing academic assignments.

Studies in Malaysia show that AI literacy, perceived usefulness, and motivation positively affect critical thinking dispositions. However, the ease of use of AI can have a negative impact if it makes students overly dependent and less cognitively engaged (Lijie, Mat Yusoff, & Mohamad Marzaini, 2025). Another study confirms that excessive use of AI can reduce critical thinking skills through cognitive offloading (Gerlich, 2025). Conversely, targeted and critical use of AI can enhance critical and collaborative thinking skills. The results of Nisma and Fibri's research show that the intensity of AI use can increase learning effectiveness but, at the same time, reduce student learning independence (Nisma & Indira Lisanty, 2025). The results of Lukman et al.'s research show problems with using AI in the learning process, including dependence, increased plagiarism, and decreased critical thinking and skills (Lukman, Riska Agustina, & Rihadatul Aisy, 2023). Meanwhile, Meiriza's research findings indicate that AI use has a positive, significant effect on students interest in learning (Meiriza, Sembiring, Sitorus, Wardana, & Sakinah, 2024). Based on previous research findings, the use of AI requires wisdom and ethics.

User satisfaction in the context of information systems has long been explained by User Satisfaction Theory (William H. Delone & McLean, 2003) AND *Expectation Confirmation Theory* (Bhattacharjee, 2001), which assert that satisfaction arises from the match between initial expectations and the actual results users receive. In the context of AI in higher education, student satisfaction arises when the AI system delivers results that are accurate, relevant, and useful for completing academic tasks. However, the literature on the relationship between AI use intensity and user satisfaction remains limited, especially in the context of Indonesian students (Chan & Hu, 2023). High AI usage intensity can increase efficiency and perceptions of academic performance. However, it also risks reducing problem-solving abilities and learning motivation if not balanced with literacy and active engagement (Tasya, Sangka, & Octoria, 2025). It is important to understand the relationship between usage intensity and satisfaction to help educational institutions develop digital literacy and AI ethics policies in proportion.

Based on this background, the research question is: Does the intensity of AI use significantly affect student satisfaction with completing academic assignments? This study aims to analyze the extent to which the frequency, duration, and variety of students AI use correlate with their level of satisfaction with this technology for academic purposes. Using a quantitative approach and linear regression analysis, this study seeks to provide empirical evidence of the causal relationship between the intensity of AI use (independent variable) and user satisfaction (dependent variable). Practically, this research also has contextual novelty because it was conducted among graduate students in the Islamic Education Management Study Program, which has unique characteristics: varying levels of digital literacy and an increasing use of AI that the institution has not systematically regulated. Thus, the results of this study not only contribute to the scientific development of user satisfaction theory in the context of AI but also provide practical policy recommendations for higher education institutions to develop ethical, proportional AI utilization systems and policies that strengthen students critical thinking skills.

B. METHODS

This study uses a quantitative, explanatory, associative research design to examine the effect of the intensity of artificial intelligence (AI) use on student satisfaction with completing college assignments. The quantitative approach provides a systematic framework for measuring

phenomena objectively, purposefully, and in a statistically testable manner (Fitri & Haryanti, 2020). The research design used was a cross-sectional survey, in which data were collected once during a specific period using an online questionnaire via google forms (Sugiyono, 2017). This approach was chosen because it enabled researchers to obtain accurate data on the relationship between variables, using students perceptions as research respondents.

The study population comprised all master's students in the Islamic Education Management (MPI) Study Program in Tulungagung Regency, East Java Province, who had used AI in the academic process. The population was relatively small for 60 people, saturation sampling was used, in which all members of the population served as the research sample. Thus, the results of this study are expected to describe the actual conditions of the entire population studied. The research instrument was a closed-ended questionnaire with a 1–5 Likert scale, consisting of two main variables: (X) AI Usage Intensity, which included indicators of frequency, duration, type of use, and purpose of use, and (Y) AI Usage Satisfaction, which included aspects of ease of use, effectiveness, suitability of results, and benefits of use. The constructs for both variables were developed based on the *Technology Acceptance Model* (Davis, 1989) and *User Satisfaction Theory* (Delone & McLean, 2003) to ensure their alignment with relevant theories.

Before being used in data collection, the research instruments were tested for validity and reliability to ensure the accuracy and consistency of the measuring tools. The validity test was conducted using Pearson Product-Moment correlation, with the criterion that items were declared valid if the Sig. (2-tailed) < 0,05 and the correlation coefficient was positive. The test results showed that all 12 items of variable X (AI Usage Intensity) had correlation values between 0,495 and 0,873, and 10 items variable Y (Student Satisfaction) had values between 0,519 and 0,876, with all significance values below 0.05. Thus, all items were declared valid and suitable for use. Furthermore, a reliability test was conducted using Cronbach's Alpha, with a minimum value of $\alpha \geq 0,70$. The test results showed $\alpha = 0,883$ for variable X and $\alpha = 0,890$ for variable Y, indicating very high internal consistency for both variables. Therefore, the research instrument was declared reliable and could be used for further analysis.

Data analysis was carried out in stages, starting with descriptive statistics to characterize the respondents and then proceeding to classical tests of normality and linearity to assess the regression model's feasibility. Next, a simple linear regression analysis was conducted to determine the effect of AI usage intensity on student satisfaction in completing college assignments. The analysis results were considered significant if the significance value (*p-value*) < 0,05. The entire research process was carried out with due regard for research ethics, including obtaining informed consent from respondents and maintaining the confidentiality of their personal data. The entire data processing was carried out using IBM SPSS Statistics software version 25.

C. RESULT & DISCUSSION

Results The study on the influence of AI use in the educational process among students provides an in-depth understanding of how integrating digital technology can affect the educational process. This chapter presents the results of the study in the form of data processing obtained through questionnaires. A discussion of the results is also presented to provide further clarification. Each stage of the analysis will be explained to provide a clear picture of the data collection, processing, and interpretation process.

RESULTS

Casewise Diagnostics Analysis

Before descriptive and inferential analyses are carried out, the data are first tested using Casewise Diagnostics to detect outliers or influential cases that may compromise the validity of the statistical model. The examination was carried out using standardized residuals and Cook's distances for each respondent. The diagnostic results showed that one respondent had a standard residual value above $\pm 3,0$, which was statistically classified as an extreme outlier. Based on Field's, analysis guidelines, this type of data can distort the estimation of regression

coefficients and reduce the model's accuracy (Field, 2018). Therefore, this one data point was eliminated from the final dataset, bringing the number of respondents used in the analysis to 59. This step was taken to ensure that the regression model was stable, valid, and representative of the actual population conditions in accordance with the principles of robust regression (Pallant, 2020).

Descriptive Analysis

Descriptive analysis was conducted to describe the profile of respondents and the trends of the research variables. The characteristics of the respondents in this study included gender, length of AI use, and average daily duration of AI use. The majority of respondents were female (69,49%), while male respondents numbered 17 (30,51%), for a total of 59 respondents. The distribution of respondents based on these categories can be seen in Figures 1 and 2 below:

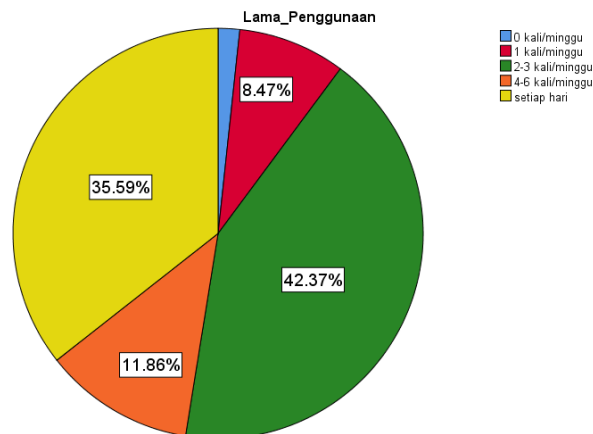


Figure 1. Distribution of Respondents Based on Duration of AI Use per Week

Based on Figure 1, the frequency of students use of Artificial Intelligence (AI) varies. Most respondents (42,37%), use AI 2-3 times per week. This indicates that most students are accustomed to using AI as part of their learning activities, with a relatively routine frequency. Conversely, only a small percentage of respondents do not use AI at all in a week. Thus, it can be concluded that the intensity of AI use among students tends to be high, indicating a positive adaptation to AI-based learning technology in the academic environment.

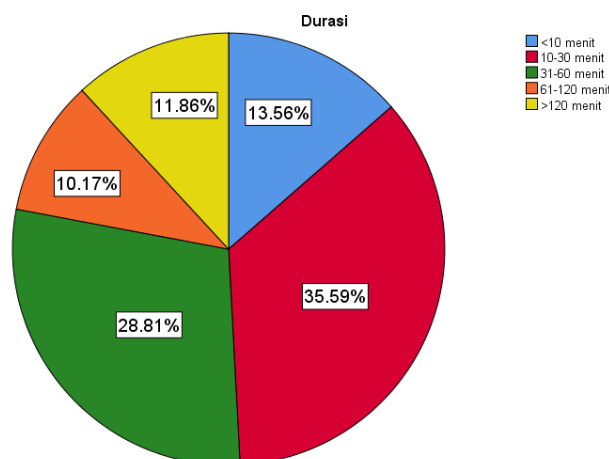


Figure 2. Distribution of Respondents Based on Average Duration of AI Use per Day

Based on Figure 2, 21 respondents (35.59%) use Artificial Intelligence (AI) for an average duration of 10–30 minutes per day. This shows that the majority of students use AI for a relatively short time each day, possibly to help with assignments, search for references, or get academic inspiration. Meanwhile, some other respondents use AI for longer or shorter periods, indicating variations in usage intensity among students. This pattern shows that AI use has

become part of students learning routines, but it is not yet used intensively for extended periods each day.

To determine the extent of variation in AI use for completing college assignments, a multiple-response analysis was conducted across six categories of academic activities. The results show that students utilize AI for various types of assignments, with details as presented in table 1:

Table 1. Results of the Analysis of Task Types with AI Assistance

Task Type	N	Responses	Respondents
Writing/compiling reports	27	24,8%	45,8%
Summarizing reading materials	24	22,0%	40,7%
Translating texts	19	17,4%	32,2%
Data analysis/coding	14	12,8%	23,7%
Preparing presentations	22	20,2%	37,3%
Other	3	2,8%	5,1%
Total	109	100,0%	184,7%

Source: Processed questionnaire data, 2025.

Explanation:

- N (Frequency): number of responses selecting that category.
- Responses: percentage of total responses (109 responses).
- Respondents: percentage of total respondents (59 people) who selected that category.

Based on the results of the multiple-response analysis, students use of AI is flexible and multidimensional, with a predominance in writing reports, summarizing reading materials, and preparing presentations. The use of AI for data analysis and programming activities is still relatively low. At the same time, the "other" category shows that a small number of students also use AI to explore additional learning resources, such as searching for further references, searching for materials not available in books or journals, and downloading relevant PDF files. Thus, it can be said that students actively use AI across various academic contexts, primarily to support writing and material preparation, which are at the core of learning in higher education.

Table 2. Descriptive Analysis Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
AI Usage Intensity	59	27	56	41.92	7.42
Student Satisfaction	59	22	48	35.15	6.67

Source: Processed questionnaire data, 2025.

The analysis results show that the average AI usage intensity score is 41.92, with a standard deviation of 7.42, while student satisfaction has an average of 35.15 with a standard deviation of 6.67. These findings indicate that students have a high level of AI use and are satisfied with its benefits in completing college assignments.

Classical Assumption Test

The classical assumption test consists of a normality test and a linearity test. The normality test was performed using the Kolmogorov–Smirnov and Shapiro–Wilk methods. All statement items for variables X and Y were deemed valid ($r = 0,495-0,873$; Sig. $< 0,05$) and reliable ($\alpha_X = 0,883$; $\alpha_Y = 0,890$) indicating that the data were normally distributed. The linearity test showed a p-value of $0.867 > 0.05$, indicating that the relationship between the two variables was linear. Thus, the data met the requirements for simple linear regression analysis.

Correlation Analysis

The Pearson correlation test results show $r = 0.518$ with Sig. $= 0.000 < 0.05$, indicating a positive and significant relationship between the intensity of AI use and student satisfaction. This correlation value falls into the moderate correlation category. This means that the greater the students use of AI, the higher their satisfaction with the results of the tasks they complete.

Simple Linear Regression Analysis

Simple linear regression analysis was conducted to determine the effect of AI usage intensity on student satisfaction. The regression test results are shown in the following table:

Table 3. Simple Linear Regression Test Results

Variable	Coefficient (B)	Std. Error	t	Sig.
(Constant)	15.619	4.335	3.603	0.001
AI Usage Intensity	0.466	0.102	4.755	0.000

Source: Processed questionnaire data, 2025.

Based on the analysis results, the regression equation is obtained:

$$Y=15.619+0.466X$$

The positive regression coefficient of 0.466 indicates that every one-unit increase in AI usage intensity will increase student satisfaction by 0.466 units. The t-value = 4,755 > t-table = 2,002 with Sig. = 0,000 < 0,05, so there is a positive and significant effect between the intensity of AI use and student satisfaction. The R² value of 0.269 indicates that AI use intensity accounts for 26.9% of the variation in student satisfaction. In comparison, the remaining 73.1% is influenced by other factors, such as digital literacy, lecturer support, learning motivation, and campus AI use policies.

DISCUSSION

The results show that the intensity of artificial intelligence (AI) use has a positive and significant effect on student satisfaction in completing college assignments. This means that the more frequently and actively students use AI in academic activities, the higher their satisfaction with the learning process and outcomes. This finding aligns with the descriptive analysis, which shows that most students use AI to draft, summarize readings, and organize initial ideas when completing assignments. The convenience, speed, and accuracy offered by AI make students feel more supported in completing assignments more efficiently. These findings support the Technology Acceptance Model, which posits that perceived usefulness and perceived ease of use are significant factors in fostering user satisfaction with a technology. When students feel that AI is practical and easy to use, their satisfaction will increase, and their tendency to continue using it will grow stronger. This finding also reinforces the User Satisfaction Theory model, which posits that satisfaction is the primary indicator of the success of information technology-based systems.

The results of this study align with those of Chan & Hu, who propose that educational institutions should develop comprehensive policies to address the multifaceted use of AI across three main dimensions: pedagogical, governance, and operational (Chan, 2023). These three dimensions are essential to ensure that AI integration not only improves learning efficiency but also maintains academic integrity. In addition, this study's results support the views of Floridi & Cowls, who emphasize the importance of applying AI ethical principles, including beneficence, non-maleficence, autonomy, and justice (Floridi & Cowls, 2021). These principles need to be introduced and internalized in higher education so that the use of AI is not only technologically intelligent but also morally wise.

However, student satisfaction with the use of AI does not depend solely on its frequency, but also on how students use it reflectively and responsibly. Targeted use of AI, accompanied by digital literacy and critical reflection skills, can improve the quality of learning outcomes and student academic motivation (Rodway & Schepman, 2023). Conversely, excessive reliance on AI without adequate conceptual understanding can undermine critical thinking and creativity (Jihan Alifa Firdaus et al., 2025). Thus, ethical and purposeful AI literacy becomes an essential prerequisite in technology-based learning. Educational institutions and lecturers have a strategic responsibility to foster this literacy through training, academic guidance, and assessment systems that emphasize process, rather than just results. An evaluation system oriented towards understanding and originality will reduce students dependence on AI.

Lecturers act as facilitators and mentors who helping students understand the line between using AI as a productivity tool and relying on it excessively.

The results of this study have practical implications that efforts to increase student satisfaction through the use of AI are not sufficient by simply increasing its intensity. Universities need to ensure that students have adequate digital literacy, ethical awareness, and reflective competence so that AI is used productively without compromising academic integrity. With proper management, AI can serve as a means of intellectual empowerment that strengthens the student learning experience, rather than replacing it. Although this study found a significant influence, further research examining mediating variables, such as digital literacy or academic ethics, is needed to gain a more comprehensive understanding of the relationship between AI use and college student satisfaction.

D. CONCLUSION

This study shows that the intensity of artificial intelligence (AI) use has a positive, significant effect on student satisfaction with completing college assignments. The greater college students use of AI, the higher their satisfaction with the ease, effectiveness, benefits, and suitability of the academic results. These findings support Davis' Technology Acceptance Model and Delone & McLean's User Satisfaction Theory, which emphasize that perceptions of usefulness and ease of use play an important role in shaping user satisfaction with technology. In the context of higher education, AI is inevitable but needs to be managed ethically and reflectively. Therefore, universities are expected to strengthen digital literacy and the ethics of AI use, and to emphasize process-based learning and creativity so that students do not rely on AI in an overly dependent way. The limitations of this study include the small number of respondents and its local scope; therefore, it is recommended that further research expand the population and adopt a mixed-methods approach to obtain more comprehensive and representative results.

REFERENCES

- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly*, 25(3), 351. <https://doi.org/10.2307/3250921>
- Chan, C. K. Y. (2023). A Comprehensive AI Policy Education Framework for University Teaching and Learning. *International Journal of Educational Technology in Higher Education*, 20(1), 38. <https://doi.org/10.1186/s41239-023-00408-3>
- Chan, C. K. Y., & Hu, W. (2023). Students' Voices on generative AI: Perceptions, Benefits, and Challenges in Higher Education. *International Journal of Educational Technology in Higher Education*, 20(1), 43. <https://doi.org/10.1186/s41239-023-00411-8>
- Davis, Fred D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319. <https://doi.org/10.2307/249008>
- Delone, William H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). SAGE Publications.
- Fitri, A. Z., & Haryanti, N. (2020). *Metodologi Penelitian Pendidikan: Kuantitatif, Kualitatif, Mixed Method, dan Research and Development*. Malang: Madani Media.
- Floridi, L., & Cowls, J. (2021). A Unified Framework of Five Principles for AI in Society. *Springer International Publishing AG*, 144, 5–17. https://doi.org/10.1007/978-3-030-81907-1_2
- Gerlich, M. (2025). AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking. *Societies*, 15(1), 6. <https://doi.org/10.3390/soc15010006>
- Hibatulwafi, F., & Laksmi, L. (2024). Fenomena Penggunaan Generative AI dalam Perilaku

- Pencarian Informasi Praktisi Teknologi. *Media Pustakawan*, 31(2), 141–155. <https://doi.org/10.37014/medpus.v31i2.5222>
- Jihan Alifa Firdaus, Rakhma Imamatul Ummah, Rahma Rizky Aprialini, Ainul Fithriyyah, Mahsusi, & Afif Faizin. (2025). Ketergantungan Penggunaan Kecerdasan Buatan (AI) pada Tugas Akademik Mahasiswa Terhadap Kemampuan Berpikir Kritis dan Kreatif. *Didaktika: Jurnal Kependidikan*, 14(1), 1203–1211.
- Lijie, H., Mat Yusoff, S., & Mohamad Marzaini, A. F. (2025). Influence of AI-Driven Educational Tools on Critical Thinking Dispositions Among University Students in Malaysia: a Study of Key Factors and Correlations. *Education and Information Technologies*, 30(6), 8029–8053. <https://doi.org/10.1007/s10639-024-13150-8>
- Lukman, L., Riska Agustina, & Rihadatul Aisy. (2023). Problematika Penggunaan Artificial Intelligence (AI) untuk Pembelajaran di Kalangan Mahasiswa STIT Pematang. *Madaniyah*, 13(2), 242–255. <https://doi.org/10.58410/madaniyah.v13i2.826>
- Meiriza, M. S., Sembiring, G. B., Sitorus, M., Wardana, V., & Sakinah, N. (2024). Pengaruh Penggunaan AI Terhadap Minat Belajar di Kalangan Mahasiswa: Studi Kasus pada Generasi Z. *AR-RUMMAN: Journal of Education and Learning Evaluation*, 1(2), 319–327. <https://doi.org/10.57235/arrumman.v1i2.4019>
- Miao, F., & Holmes, W. (2024). *Guidance for Generative AI in Education and Research*. Paris: UNESCO Publishing. <https://doi.org/10.54675/EWZM9535>
- Nisma, & Indira Lisanty, F. (2025). Hubungan Intensitas Penggunaan Aplikasi AI dengan Efektivitas Belajar Pada Mahasiswa Kebidanan. *ILLEA: Journal of Health Sciences, Public Health, and Medicine*, 1(2), 95–99.
- Pallant, J. (2020). *SPSS Survival Manual* (7th ed.). McGraw-Hill Education.
- Rodway, P., & Schepman, A. (2023). The impact of adopting AI educational technologies on projected course satisfaction in university students. *Computers and Education: Artificial Intelligence*, 5, 100150. <https://doi.org/10.1016/j.caeai.2023.100150>
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* (cetakan 25). Bandung: Alfabeta.
- Tasya, C. H., Sangka, K. B., & Octoria, D. (2025). Pengaruh Pemanfaatan Artificial Intelligence (AI) Terhadap Motivasi Belajar Mahasiswa dengan Literasi Digital Sebagai Variabel Moderating. *Jurnal Pendidikan Ekonomi (JUPE)*, 13(2), 153–165. <https://doi.org/10.26740/jupe.v13n2.p153-165>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic Review of Research on Artificial Intelligence Applications in Higher Education – Where Are the Educators? *International Journal of Educational Technology in Higher Education*, 16(1), 39. <https://doi.org/10.1186/s41239-019-0171-0>