P-ISSN: 1411-3635
E-ISSN: 2962-5645

STUDENT PERCEPTIONS OF AI-BASED DECISION SUPPORT SYSTEMS: A DESCRIPTIVE STATISTICAL ANALYSIS

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ABSTRAK

Perkembangan kecerdasan buatan atau Artificial Intelligence (AI) yang pesat telah memberikan pengaruh yang signifikan terhadap aktivitas akademik mahasiswa, khususnya dalam proses pengambilan keputusan. Penelitian ini bertujuan untuk mengkaji tingkat ketergantungan mahasiswa terhadap sistem pendukung keputusan berbasis AI serta mengidentifikasi faktor-faktor apa yang memengaruhi perilaku tersebut, termasuk kepercayaan dan kemampuan berpikir kritis. Penelitian ini menggunakan pendekatan kuantitatif dengan memanfaatkan metode survei. Data dalam penelitian ini dikumpulkan dari 60 mahasiswa di wilayah Jabodetabek yang berasal dari berbagai bidang studi yang berbeda melalui kuesioner daring dan dianalisis menggunakan statistik deskriptif. Hasil penelitian menunjukkan bahwa penggunaan AI di kalangan mahasiswa sangat tinggi. Kebanyakan mahasiswa memanfaatkan sistem pendukung keputusan berbasis AI untuk memahami tugas, menghasilkan ide, dan mengevaluasi jawaban. Sebagian besar responden menunjukkan tingkat ketergantungan sedang hingga tinggi terhadap sistem AI. Meskipun demikian, mahasiswa tetap melakukan evaluasi kritis terhadap informasi yang didapat melalui sistem AI sebelum mengambil keputusan. Namun, ditemukan pula kekhawatiran terkait ketergantungan berlebihan dan penurunan kemampuan berpikir mandiri. Temuan ini menunjukkan bahwa penggunaan AI memiliki manfaat sekaligus risiko, sehingga diperlukan pemanfaatan yang seimbang dan kritis untuk mendukung pengambilan keputusan yang lebih efektif.

Kata kunci: Berpikir Kritis, Kecerdasan Buatan, Ketergantungan Mahasiswa, Pendidikan Tinggi, Sistem Pendukung Keputusan.

ABSTRACT

The rapid development of artificial intelligence (AI) has influenced many aspects of students' academic activities, especially in decision-making processes. Many university students now use AI-based tools to help them understand assignments, generate ideas, and evaluate information during their studies. This study aims to examine students' reliance on AI-based decision support systems and identify several related factors, including trust and critical thinking. A quantitative survey method was used in this research, and data were collected from 60 university students from different academic backgrounds in the Jabodetabek area through an online questionnaire distributed using Google Forms. The collected data were analyzed using descriptive statistics. The findings showed that AI tools were widely used among students, with many respondents demonstrating moderate to high levels of reliance on AI systems. Although students tended to trust AI-generated outputs, many respondents still evaluated the information critically before using it in academic tasks. However, some respondents also believed that excessive AI usage could reduce independent thinking abilities. Overall, the findings suggest that AI provides both benefits and potential risks in academic contexts. Therefore, students should use AI in a balanced and critical manner so that technology can support learning without reducing independent thinking and decision-making abilities.

Keywords: Artificial Intelligence (AI), Critical Thinking, Decision Support Systems, Higher Education, Student Reliance.

P-ISSN: 1411-3635
E-ISSN: 2962-5645

1. INTRODUCTION

Artificial intelligence (AI) has become one of the key components of the educational environment, particularly among students in higher education. Many university students use AI-based tools, especially chatbots such as ChatGPT, to support their academic tasks including understanding concepts or new ideas, solving problems, and conducting research. Some recent studies demonstrate that artificial intelligence technologies have been adopted by many students for varied functions in their academic activities (Deng et al., 2025; Deschenes & McMahon, 2024; Hershkovitz et al., 2025; Rahman et al., 2025).

As AI usage continues to increase, it provides students with tools that help them optimize academic procedures and make decisions. The fact that students heavily rely on AI tools is evident. Previous studies demonstrate that many students rely on AI-generated outputs because it provides convenient and fast responses (Johnston et al., 2024; Pitts et al., 2025).

Reliance on AI has become a key issue in human-AI interactions. Reliance on AI can range from appropriate reliance to overreliance and under-reliance (Dogru & Krämer, 2025). In academic contexts, overreliance occurs when students accept AI-generated responses without proper analysis, which negatively affects their learning outcomes and cognitive development (Çela et al., 2024; Gerlich, 2025; Hooper, 2025). Another issue that determines reliance on AI involves trust, which tends to increase the level of acceptance of AI output without proper critical evaluation (Abuzar et al., 2025; Yang, 2024).

The integration of AI-driven decision support systems in educational contexts poses serious problems regarding students' cognitive engagement. Even though AI may improve efficiency and accessibility, it may reduce the need for deeper cognitive processing, leading to reliance and less critical and reflective thinking (Ejaz et al., n.d.; Romeo & Conti, 2025; Steyvers & Kumar, 2024).

Critical thinking plays a very important role in interactions between students and AI systems. Students with stronger critical thinking skills will be able to assess AI-generated output critically, while others might use AI outputs in their studies without sufficient judgement (Anwar, 2025; Hou et al., 2025; Lawasi et al., 2024). This indicates that the dependence on AI not only involves technological aspects but is also related to individual cognitive features.

Although there are studies exploring AI usage, trust, and decision support systems in the literature, research specifically focusing on students' reliance behavior is still limited, particularly in the context of higher education in Indonesia. Therefore, the purpose of this study is to investigate the use of AI-based decision support systems by university students and understand their dependence and how they affect their decision-making processes and critical thinking.

2. METHODOLOGY

The study used a quantitative approach with a survey method to examine university students' reliance on AI-based decision support systems. The survey method was used to explore students' perception and adoption of generative AI in academic contexts (Deschenes & McMahon, 2024; Dikilitaş et al., 2024).

The data in this study were collected through a structured online questionnaire. Several variables, such as AI usage, trust, reliance, and decision-making behaviors, were measured. The concept of trust is considered a core aspect that influences users' acceptance of AI, while reliance was associated with the level of trust and individual characteristics (Kaur Saggu, n.d.; Küper & Krämer, 2025).

P-ISSN: 1411-3635
E-ISSN: 2962-5645

This study followed several systematic stages to ensure that the research process was conducted in a structured manner. To provide a clearer overview of these stages, the overall research process used in this study is illustrated in Figure 1.

Figure 1. Research Process

Figure 1 presents the overall process carried out in this study. The research began with a literature review of previous studies discussing the use of artificial intelligence in students' decision-making processes. After determining the focus of the study, participants who met the required criteria were selected, and data were collected through an online questionnaire distributed to university students from different universities. The collected responses were then analyzed using descriptive statistics to identify patterns related to students' AI usage and reliance in academic activities.

The participants in this study were university students who were familiar with AI-based tools such as ChatGPT, Gemini, Elicit, and Perplexity. These tools were commonly used to support academic activities, including completing assignments, solving problems, and organizing study-related tasks. In total, 60 students participated in this study. This number of participants was considered sufficient to represent different student perspectives and identify patterns related to AI usage and reliance in academic contexts.

Data was collected through an online questionnaire distributed using Google Forms. The questionnaire consisted of close-ended statements measured using a 5-point Likert scale. The questions focused on students' AI usage, trust in AI systems, reliance on AI-based decision support systems, and decision-making behavior. Using an online questionnaire also made the data collection process more practical while helping maintain consistency in participants' responses.

This research investigated various aspects that relate to the way students interact with the decision-support system of AI in their educational activities. These variables include the use of AI, trust, reliance behavior, and decision-making behavior. Table 1 shows the indicators and sample questions for measuring each of these variables.

Table 1. Measurement of Research Variables

Variable	*Indicator*	*Sample Question*	*Scale*
AI Usage	Frequency	I frequently use AI tools for academic tasks	5-point Likert (Never-Very Often)
Trust	Reliability	I trust the information provided by AI tools	5-point Likert (Strongly Disagree-Strongly Agree)
Reliance	Dependency	I rely on AI when making academic decisions	5-point Likert (Never-Very Often)
Decision-making	Independence	I make decisions without AI assistance	5-point Likert (Never-Very Often)

Table 1 shows the variables that were considered for analysis in the current study including AI usage, trust, reliance, and decision-making behavior. Each variable was measured using several survey questions to ensure reliable answers from the respondents. The following are the measures used together with examples of questions asked.

The responses collected from participants were analyzed using descriptive statistics, such as frequencies, percentages, mean scores, median values, and standard deviations to identify patterns in students' AI usage and perceptions toward AI-based decision support systems. In addition, correlation analysis was conducted to examine the relationships between AI usage, trust, reliance, critical evaluation, and independent thinking among students.

P-ISSN: 1411-3635
E-ISSN: 2962-5645

This study followed basic ethical research principles during the data collection process. Participation was voluntary, and respondents were informed about the purpose of the study before answering the questionnaire. Personal information was not collected, and the participants' responses were kept confidential.

3. RESULTS

To provide a general overview of students' responses toward AI-based decision support systems, descriptive statistical analysis was conducted for the main research variables. The results of the descriptive statistics, including mean, median, and standard deviation values, are presented in Table 2.

Table 2. Descriptive Statistics of Research Variables

Variable	*Mean*	*Median*	*Std. Dev*
AI Usage	4.08	4	0.79
Reliance	3.15	3	0.94
Trust	3.42	3	0.72
Critical Evaluation	4.07	4	0.80
Independent Thinking	3.35	3	1.05

The mean scores indicate that students generally demonstrated high levels of AI usage and critical evaluation in academic activities. AI usage obtained the highest mean score (4.08), showing that students frequently used AI-based decision support systems during their studies. Similarly, the mean score for critical evaluation was also relatively high (4.07), indicating that many students still reviewed and evaluated AI-generated information before applying it in their academic work.

Meanwhile, the variables of reliance (3.15), trust (3.42), and independent thinking (3.35) showed moderate mean scores. These findings suggest that although students relied on and trusted AI systems to some extent, they did not fully depend on AI in making academic decisions. In addition, the standard deviation values were relatively low to moderate, indicating that respondents shared relatively similar perceptions regarding AI usage and decision-making behavior.

In addition to descriptive statistical analysis, correlation analysis was also conducted to examine the relationships between AI usage, trust, reliance, critical evaluation, and independent thinking among students. The results of the correlation analysis are presented in Table 3.

Table 3. Correlation Analysis of Research Variables

Variables	*Correlation (r)*
AI usage & Reliance	0.49
Trust & Reliance	0.26
AI Usage & Critical Evaluation	-0.14
Reliance & Independent Thinking	0.24

The correlation analysis showed that several variables in this study were related to one another. The strongest relationship was found between AI usage and reliance (r = 0.49), indicating a moderate positive relationship. This suggests that students who used AI systems more frequently also tended to rely on them more during academic activities. Meanwhile, trust and reliance showed a weak positive correlation (r = 0.26), indicating that students who trusted AI systems more were slightly more likely to depend on them in decision-making processes.

In addition, AI usage and critical evaluation showed a very weak negative relationship (r = -0.14), suggesting that higher AI usage was not strongly associated with increased critical evaluation behavior. Reliance and independent thinking also demonstrated a weak positive relationship (r = 0.24). Overall, these findings indicate that AI usage, trust, reliance, and critical evaluation were interconnected in influencing students' academic decision-making behavior.

The following paragraphs describe the results obtained from the survey conducted on 60 university students. The purpose of the survey is to investigate the use of AI-based decision support system by students, which includes how often AI is used, dependence upon the AI, and critical thinking behavior.

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In today's education system, AI-based decision support systems have become more common among students for academic activities. Many students use AI tools to help them understand study materials, brainstorm ideas, and evaluate their answers while completing their homework. The usage rate of AI by students can be seen from Figure 2 below.

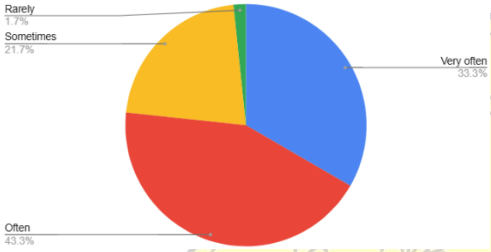

Figure 2. The Frequency of Student Using AI

From the results presented in Figure 2, most of the respondents frequently used AI technology during their academic activities. A substantial number of respondents used AI frequently (43.3%), while 33.3% of respondents reported using AI very frequently. The use of AI by the few respondents was lower compared to the rest.

Besides examining the frequency of AI usage, this study also explored students' reliance on AI systems in academic decision-making. Although AI can help students complete tasks more efficiently, excessive reliance on AI may affect critical thinking abilities. The level of students' reliance on AI systems is presented in Figure 3.

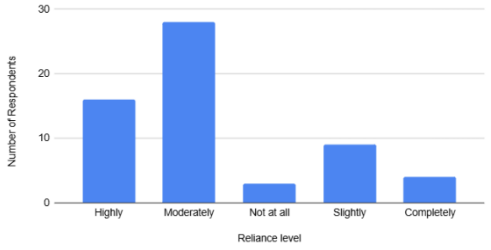

Figure 3. Level of Student Reliance on AI-based Decision Support Systems

Figure 3 shows that many students demonstrated moderate to high levels of reliance on AI systems during academic activities. Most respondents reported moderate reliance on AI tools (46.7%), followed by students who indicated high reliance (26.7%). Meanwhile, only a small number of respondents showed low levels of dependence on AI systems.

This study also examined how students evaluated AI-generated information before using it in academic activities. Critical evaluation was important because students needed to determine whether the information provided by AI systems was accurate and relevant. The results related to students' critical evaluation behavior are presented in Figure 4.

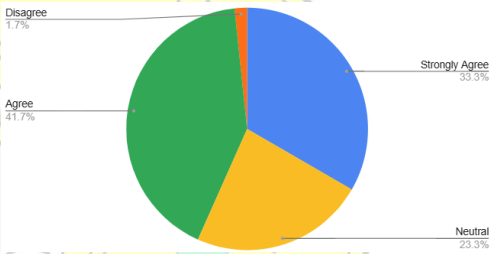

Figure 4. Students' Critical Evaluation of AI-generated Outputs

As shown in figure 4, most students responded with Agree, followed by Neutral and Strongly Agree, when evaluating AI-generated outputs. Only a few respondents selected Disagree, which indicates that many students still checked and reviewed AI recommendations before using them in academic activities. These findings show that students generally did not fully rely on AI outputs without evaluating the information first.

Apart from the benefits of AI usage, this study also examined students' opinions regarding its impact on independent thinking. Frequent use of AI tools may influence how students process information and make decisions during academic activities. The perceived impact of AI usage on students' independent thinking is presented in Figure 5.

P-ISSN: 1411-3635
E-ISSN: 2962-5645

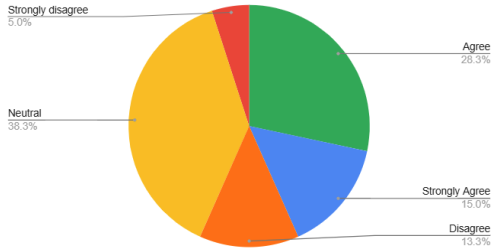

Figure 5. Perceived Impact of AI on Independent Thinking

As shown in Figure 5, some respondents expressed concerns that excessive AI usage could affect their independent thinking abilities. Several students agreed that relying too much on AI tools might reduce their ability to think independently during academic activities.

4. DISCUSSION

The results show that AI has become part of students' daily academic activities. Instead of being used only occasionally, AI tools are now commonly used to help students understand materials, generate ideas, and evaluate their answers. This reflects the growing role of technology-assisted learning, where many students rely on AI tools to support their learning process.

In addition, the findings show that many students demonstrated moderate levels of reliance on AI-based decision support systems. However, the results also suggest that students did not depend entirely on AI when making academic decisions. Instead, many students viewed AI as a supporting tool that helped them complete academic tasks and make decisions more efficiently.

Another important finding from the survey is that many students still evaluated AI-generated information before using it in their academic activities. Even though AI tools were widely used, most participants stated that they checked and reviewed the information before applying it to their work. This suggests that students were aware of the limitations of AI systems and did not completely rely on AI-generated answers without evaluation.

However, the survey also revealed concerns regarding excessive reliance on AI systems. Some participants believed that frequent use of AI tools could affect students' independent thinking and reduce their involvement in solving problems. Although AI tools can help students complete tasks more quickly and efficiently, relying too much on AI may gradually weaken critical thinking and problem-solving abilities.

Overall, the results show that AI usage, reliance, trust, and critical thinking are closely connected to each other. AI-based decision support systems provide many benefits for students during academic activities, but students still need to evaluate the information provided by AI critically. Therefore, AI should be used responsibly so that it can support learning activities without reducing students' independent thinking abilities.

5. CONCLUSION

This study examined university students' reliance on AI-based decision support systems and several factors related to their decision-making behavior. The findings showed that AI has become part of students' daily academic activities. Many students used AI tools to help them understand materials, generate ideas, and evaluate answers during their studies.

The results also showed that students demonstrated moderate to high levels of reliance on AI systems. Even though AI tools were widely used, many students still checked and evaluated AI-generated information before using it in academic activities. This suggests that students were aware of the limitations of AI systems and did not fully rely on AI when making decisions.

However, the findings also revealed concerns regarding excessive AI usage. Some students believed that frequent use of AI tools could reduce independent thinking and affect students' involvement in problem-solving activities. Although AI tools provide convenience and efficiency, relying too much on AI may negatively affect critical thinking abilities over time.

Overall, this study showed that AI-based decision support systems provide many

benefits for students in academic activities and decision-making processes. However, students still need to use AI responsibly and critically so that technology supports learning without reducing independent thinking abilities.

Future research is recommended to examine the long-term effects of AI usage on students' cognitive development and explore strategies for integrating AI into education while maintaining critical thinking skills.

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P-ISSN: 1411-3635
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