Student Perceptions of AI Tools in Higher Education: Insights on Productivity, Digital Fatigue, Ethical Awareness, and Creativity (A Case Study of Economics Students at Universitas Advent Indonesia)

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Abstract *- This study examines university students' perceptions of the incorporation of Artificial Intelligence (AI) tools in higher education, focusing on academic productivity, digital weariness, ethical implications, and creativity. As platforms like ChatGPT, Grammarly, Perplexity.ai, and Gemini become more integrated into academic settings, it is crucial to comprehend how students assess and interact with these technologies. A quantitative descriptive methodology was utilized, with data gathered using a standardized Likert-scale questionnaire distributed to 117 undergraduate students from the Faculty of Economics at Universitas Advent Indonesia. The analysis was performed using IBM SPSS Statistics version 27, and the focus was on descriptive statistics, including means, percentages, and standard deviations, to provide a comprehensive profile of student perceptions without exploring causal relationships between variables. The results indicate that the average perception of students on academic productivity was high (Mean = 4.00, SD = 0.806), with 74% of participants agreeing that AI tools improve academic efficiency. The average AI usage among students was relatively high, with a mean score of 4.23. However, concerns about digital fatigue were also evident (Mean = 3.38, SD = 1.122), as 47% of respondents reported experiencing it. Furthermore, students showed a moderate level of ethical awareness (Mean = 3.84, SD = 0.941), with 64% demonstrating awareness of academic integrity issues. Regarding creativity and critical thinking, apprehensions were expressed about the impact on originality (Mean = 3.65, SD = 0.975), as 57% of students contended that AI might constrain originality. The findings indicate that while students acknowledge the benefits of AI in education, they are apprehensive regarding its potential threats to creativity and ethical conduct. The research underscores the necessity for higher education institutions to formulate explicit regulations and devise student-focused digital literacy initiatives that promote the responsible and ethical utilization of AI tools in academic environments.*

Keywords: AI Tools, Academic Productivity, Digital Fatigue, Ethical Awareness, Student Creativity

I. INTRODUCTION

In recent years, the integration of Artificial Intelligence (AI) tools in education has revolutionized the way students approach their academic work. From AI-based writing assistants like ChatGPT to tools for grammar correction, research assistance, and data analysis, AI is shaping learning environments

(Song & Song, 2023). The growing adoption of AI in higher education reflects a desire for increased efficiency and support in managing academic workloads. However, it also brings new challenges, particularly related to student well-being, academic integrity, and the development of independent thinking skills.

While AI tools are widely perceived to enhance productivity, concerns have emerged about their potential downsides. Digital fatigue—defined as mental and physical exhaustion caused by extended use of digital tools—is becoming increasingly relevant in AI-supported learning environments (Chiparausha, 2022). Furthermore, ethical issues such as over-reliance on AI, diminished originality, and academic dishonesty are topics of increasing discussion.

Despite the potential advantages of AI tools in the educational process, the rapid adoption of these technologies has raised questions about their impact on student productivity, academic performance, and mental well-being. While AI tools promise to improve efficiency and performance, digital fatigue—the physical and mental exhaustion resulting from extensive screen time and reliance on digital platforms—has become a growing concern (Shalaby, 2024). Moreover, ethical questions arise regarding the over-reliance on AI tools and their potential effect on critical thinking skills, academic integrity, and the authenticity of students' work (Rane et al., 2023)

Although prior studies have explored the effectiveness of AI tools in enhancing academic outcomes, limited research has addressed how students themselves perceive the ethical, academic, and cognitive consequences of frequent AI usage. In Indonesia, most discussions about AI in education still focus on its ability to assist with grammar correction, language translation, or simplifying research tasks. For instance, Agustina & Damanik, (2024) found that AI grammar-checker applications help improve students' writing skills, but their study did not investigate how these tools affect independent thinking or originality. Similarly, research by Sari & Suyatmini, (2024) evaluated the use of AI chatbots in accounting education and reported improved student interaction, yet failed to examine ethical concerns or the potential for digital fatigue. However, studies that specifically examine how AI affects students' creativity, independence, or ethical decision-making are still lacking.

To address these gaps, this study investigates student perceptions regarding the use of AI tools in academic contexts. The objectives of this research are: (1) to examine students' perceptions of the usefulness of AI tools in improving academic productivity; (2) to analyze students' perceptions regarding the relationship between AI-related digital fatigue and academic engagement; (3) to assess students' perceptions on how ethical concerns influence their use of AI tools; and (4) to evaluate the perceived effects of AI on students' creativity and critical thinking.

By addressing these objectives, the study seeks to contribute to a more balanced understanding of AI's role in education and offer practical insights for educators and policymakers on responsible AI integration.

II. LITERATURE REVIEW

AI Tools in Education

Artificial Intelligence (AI) has increasingly integrated into education, offering tools that assist students in various aspects of their academic work. AI-based platforms such as ChatGPT, Grammarly, and Turnitin are widely used to support writing, proofreading, and plagiarism detection. According to Chen et al., (2020), AI tools enhance learning by personalizing content, automating feedback, and helping students organize and analyze information more efficiently. This technological integration fosters deeper learning and streamlines educational processes. Similarly, Pedro et al., (2019) suggest that AI tools foster student independence and time management by reducing the burden of repetitive academic tasks. These tools also offer 24/7

accessibility, which enhances flexibility and student-centered learning (Popenici & Kerr, 2017). However, over-reliance may lead to reduced cognitive engagement, as noted by Zhai et al., (2024), raising questions about their long-term effects on student growth. While most studies report positive impacts, few have assessed how students themselves perceive these changes in learning autonomy or critical engagement, a gap this study seeks to address.

H1: The usage of AI tools is perceived to have a positive effect on students' academic productivity.

Digital Fatigue and Its Impact on Students

Digital fatigue defined as the cognitive and physical exhaustion caused by prolonged exposure to digital platforms has been a growing concern in AI-enhanced learning environments. (Marsh et al., 2022) argue that constant screen time and the high volume of digital content consumed lead to cognitive overload and reduced productivity. This fatigue manifests as a loss of motivation, difficulty concentrating, and decreased academic performance.

Studies show that reliance on digital platforms, including AI tools, significantly increases screen time, contributing to fatigue (Shanmugasundaram & Tamilarasu, 2023). The combination of digital fatigue and academic pressure can negatively impact both students' mental well-being and academic outcomes. Reinecke et al., (2017) found that digital fatigue increases stress, anxiety, and declines in mental health, all of which hinder academic performance.

While these findings confirm the strain of digital engagement, little is known about how students themselves interpret and manage this fatigue within the context of AI usage. This study builds on that gap by directly capturing student perceptions.

H2: Increased usage of AI tools is perceived to be associated with the occurrence of digital fatigue among students.

Ethical Concerns in the Use of AI Tools

The rise of AI in education has introduced several ethical concerns. One major issue involves academic integrity. AI tools, such as writing assistants, could lead to plagiarism or over-reliance on technology (Kim et al., 2024). Miao et al., (2023) emphasize the risk of delegating academic thinking to AI systems, potentially undermining the authenticity of student outputs. In the Indonesian context, studies like Sari & Suyatmini, (2024) highlight that while AI tools are integrated in classrooms, discussions on their ethical implications remain limited. Despite increasing discourse globally, students' internalization of ethical concerns and how these affect their tool usage remain underexplored, particularly in the Indonesian higher education context.

H3: Students perceive that their ethical awareness influences the responsible and informed use of AI tools in education.

Impact on Critical Thinking and Creativity

While AI tools are often praised for boosting productivity, their impact on creativity and critical thinking remains controversial. Bozkurt et al., (2024) caution that heavy reliance on AI-generated content may inhibit students from engaging deeply with academic material. (Yilmaz

et.al., 2023) also notes that students who frequently use AI tools report lower confidence in solving problems independently.

Over-reliance on AI tools may also undermine critical thinking and creativity (Gerlich, 2025). Although AI can support brainstorming and ideation, Zhao et al., (2024) found that it may also encourage surface-level thinking when used as a shortcut. Yet, few empirical studies examine this phenomenon from the student's viewpoint. This study aims to fill that gap by analyzing how students perceive the effect of AI on their originality and intellectual engagement.

H4: The frequent use of AI tools is perceived to have a negative effect on students' creativity and critical thinking.

III. MATERIALS AND METHODS

This study employed a quantitative descriptive research design to explore the perceptions of university students regarding the use of Artificial Intelligence (AI) tools in academic settings. This approach was deemed appropriate for capturing measurable patterns and levels of agreement across key themes, including productivity, digital fatigue, ethical awareness, and creativity. The research was non-experimental and survey-based, using structured self-report data.

The participants were 117 undergraduate students from the Faculty of Economics at Universitas Advent Indonesia. A non-probability convenience sampling technique was applied due to accessibility and the relevance of this academic group to the study objectives. Ethical clearance was obtained, and all respondents were informed about the confidentiality of their responses and participated voluntarily. The demographic profile of the participants was as follows: 51.3% were female and 48.7% male. The majority were aged between 17 and 19 years (52.1%), followed by those aged 20 to 22 years (41.9%), and the rest were above 22 years. In terms of study programs, 55.6% were enrolled in Accounting Major, while the remainder were from Management Major and Digital Business Major. Regarding academic year, 21.4% were in their first year, 23.9% in the second year, 17.9% in the third year, and the rest were in their fourth year or beyond.

Data collection was carried out using an online questionnaire developed through Google Forms. The instrument consisted of close-ended statements, each rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire also included a specific item to assess the average frequency of AI tool usage among respondents. The items were grouped to reflect the study's four main constructs: academic productivity, digital fatigue, ethical awareness, and critical thinking/creativity. The instrument's validity and reliability were assessed through a pilot study. However, the pilot study revealed limitations in the instrument's overall validity and reliability, with only a few items demonstrating acceptable validity. Consequently, the research was refocused to provide a descriptive analysis rather than a correlational study.

For data analysis, the collected data were coded and processed using **IBM SPSS Statistics, version 27**. Due to the limitations of the instrument's validity and reliability, inferential statistical analyses, such as Pearson correlation or regression, were not performed. Instead, the analysis concentrated exclusively on descriptive statistics, including **means, percentages, and standard deviations**, to provide a comprehensive profile of student perceptions. This approach allowed the researcher to accurately delineate the patterns and distributions of responses for each variable, providing a solid foundation for understanding the initial findings.

IV. RESULTS AND DISCUSSION

The analysis of data collected from 117 undergraduate students revealed their perceptions regarding the use of AI tools in an academic setting. The collected data were processed and analyzed using IBM SPSS Statistics version 27. The results are presented below, with a focus on descriptive statistics to provide a comprehensive profile of student perceptions without exploring causal relationships between variables. The high average usage rate of AI tools (Mean = 4.23) provides a critical context for the study's main findings.

Academic Productivity

The results indicate a strong positive perception of AI tools' impact on academic productivity. The high average mean score of 4.00 (SD = 0.806) suggests that students generally agree that AI tools help them in their academic tasks. This is further supported by the finding that 74% of participants concurred that AI tools improve academic efficiency. The individual item analysis reveals consistently high mean scores across most productivity-related items, with the highest being on the statement "AI tools help me complete academic tasks faster" (Mean = 4.34, SD = 0.659). The relatively low standard deviation for this construct indicates a strong consensus among respondents.

Tabel 1. Descriptive Statistics of Academic Productivity

Statistics

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
N	Valid	117	117	117	117	117	117	117	117	117	117
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		4.03	4.09	4.22	4.34	3.60	3.94	3.95	3.94	3.92	4.01
Median		4.00	4.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00
Mode		4	4	4	4	3	4	4	4	4	4
Std. Deviation		.776	.765	.744	.659	.938	.802	.859	.854	.882	.782
Minimum		2	2	2	2	1	2	1	1	1	2
Maximum		5	5	5	5	5	5	5	5	5	5

Digital Fatigue

The findings reveal that a significant portion of students experience digital fatigue. The average mean score of 3.38 (SD = 1.122) indicates a moderate level of agreement with statements related to digital weariness. The data shows that 47% of students reported experiencing digital fatigue. A closer look at the individual items shows some variability, with the statement "I feel exhausted from spending too much time on digital devices for academic tasks" having a particularly high mean score (Mean = 3.88, SD = 1.092), suggesting this is a key area of concern. The higher standard deviation for this construct compared to productivity suggests a wider range of opinions among students regarding their experience with digital fatigue.

Tabel 2. Descriptive Statistics of Digital Fatigue

Statistics

		DF1	DF2	DF3	DF4	DF5	DF6	DF7	DF8
N	Valid	117	117	117	117	117	117	117	117
	Missing	0	0	0	0	0	0	0	0
Mean		3.45	3.34	3.68	3.88	3.02	3.22	3.26	3.15
Median		3.00	3.00	4.00	4.00	3.00	3.00	3.00	3.00
Mode		3	3	4	4	3	3	3	3
Std. Deviation		1.148	1.168	1.049	1.092	1.114	1.076	1.133	1.198
Minimum		1	1	1	1	1	1	1	1
Maximum		5	5	5	5	5	5	5	5

Ethical Awareness

Students demonstrate a considerable level of awareness regarding the ethical implications of using AI tools. The overall mean score of 3.84 (SD = 0.941) indicates a general agreement among students on the importance of academic integrity and the potential for misuse. This is supported by the finding that 64% demonstrated awareness of academic integrity issues. The highest mean score within this construct was for the statement "I am aware of the rules and regulations about using AI tools in my academic work" (Mean = 4.17, SD = 0.967), suggesting a strong recognition of institutional policies.

Tabel 3. Descriptive Statistics of Ethical Awareness

Statistics

		EA1	EA2	EA3	EA4	EA5	EA6	EA7	EA8
N	Valid	117	117	117	117	117	117	117	117
	Missing	0	0	0	0	0	0	0	0
Mean		3.44	3.81	3.74	4.17	4.13	3.74	3.92	3.74
Median		3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Mode		3	4	4	5	5	4	4	4
Std. Deviation		1.003	.919	1.012	.967	.866	.939	.911	.913
Minimum		1	1	1	1	2	1	1	1
Maximum		5	5	5	5	5	5	5	5

Creativity and Critical Thinking

The findings show a notable concern among students that AI tools may hinder creativity and critical thinking. The overall mean score of 3.65 (SD = 0.975) suggests a moderate level of agreement with statements related to this concern. Specifically, 57% of students contended that AI technologies might constrain originality and diminish profound cognitive involvement. The individual item "Regular use of AI tools makes it harder for me to think creatively on my own" had a mean score of 3.91 (SD = 0.841), indicating a strong concern among students about the impact on their originality.

Tabel 4. Descriptive Statistics of Creativity

Statistics

		C1	C2	C3	C4	C5	C6	C7
N	Valid	117	117	117	117	117	117	117
	Missing	0	0	0	0	0	0	0
Mean		3.71	3.61	3.66	3.56	3.91	3.48	3.65
Median		4.00	4.00	4.00	4.00	4.00	3.00	4.00
Mode		4	4	3	4	4	3	3
Std. Deviation		1.051	1.008	.984	.960	.841	.997	.985
Minimum		1	1	1	1	2	1	1
Maximum		5	5	5	5	5	5	5

To complement the descriptive statistical analysis, Table 5. presents the percentage distribution of respondent agreement levels for each variable. Overall, this data reveals a clear pattern: positive perceptions towards Academic Productivity and Ethical Awareness, but varying concerns related to Digital Fatigue and Creativity.

Table 5. Percentage Distribution of Student Agreement Levels for Each Hypothesis

Hypothesis	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
H1: The usage of AI tools has a positive effect on students' academic productivity	1.7%	1.8%	22.5%	43.7%	30.3%
H2: Increased usage of AI tools is positively correlated with the occurrence of digital fatigue among students.	5.8%	17.5%	29.7%	31.9%	15.1%
H3: Students' ethical awareness influences the responsible and informed use of AI tools in education.	2.6%	6.8%	26.2%	34.2%	29.8%
H4: Frequent use of AI tools negatively affects students' critical thinking and creativity in academic tasks.	2.6%	6.0%	33.7%	34.2%	23.2%

V. CONCLUSION

This study aimed to explore how university students perceive the role of AI tools in their academic activities, with a focus on productivity, digital fatigue, ethical awareness, and creativity. Drawing on a quantitative descriptive analysis of responses from 117 economics students at Universitas Advent Indonesia, the findings reveal a nuanced understanding of both the benefits and challenges posed by AI in education.

A majority of students acknowledged that AI tools enhance their productivity, supporting their ability to complete academic tasks more efficiently. However, concerns about digital fatigue, ethical boundaries, and diminished creativity were also apparent. While nearly half of the participants reported experiencing fatigue related to AI use, most remained ethically aware, indicating a general sense of responsibility in how they apply such tools. Importantly, more than half of the respondents believed that excessive AI use might reduce their originality and critical thinking.

These insights contribute to the broader academic conversation by highlighting how students in the Indonesian higher education context evaluate the trade-offs of AI integration. The study addresses a gap in the literature by centering student voices in a rapidly evolving digital environment, particularly in relation to ethical and cognitive implications.

This research is limited by its sample size and demographic focus, as it only involved students from a single faculty at one university. Additionally, **the instrument's low validity and reliability limited the analysis to descriptive statistics,** thereby restricting the ability to explore causal relationships between variables. Future studies could expand this scope to include students from various academic disciplines and institutions, and potentially apply mixed methods to deepen the analysis and explore relationships between variables using a more robust instrument.

Educational institutions are encouraged to take an active role in guiding students toward responsible AI usage by promoting digital literacy, academic integrity, and the development of independent thinking skills. As AI continues to shape education, fostering a balanced and ethical approach to its use is essential for sustaining meaningful learning outcomes.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for all aspects of this research. This includes the study's conceptualization, methodology, data collection, analysis, interpretation, writing of the original draft, and final revisions.

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