

# Agentic AI Adoption : Balancing Enthusiasm and Ethical Concerns An Exploratory Study

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## ABSTRACT

Agentic AI represents a significant paradigm shift in artificial intelligence, transitioning from passive command execution to autonomous goal pursuit. This exploratory study investigates user perceptions toward Agentic AI adoption in Indonesia, focusing on the balance between functional enthusiasm and ethical concerns. The 20 Likert-scale statements were developed based on the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and AI trust frameworks. These items cover key dimensions including perceived usefulness, ease of use, trust in autonomy, productivity enhancement, data privacy, loss of human control, algorithmic bias, and adoption intention. Utilizing Exploratory Data Analysis (EDA) supplemented with non-parametric tests on a convenience sample of 22 respondents predominantly tech-savvy young adults this study reveals high familiarity with AI tools (54.5% daily users). Respondents showed strong optimism regarding productivity and efficiency (Positive Aspects mean = 3.52), while maintaining notable ethical concerns (Concern Aspects mean = 3.64). The instrument demonstrated excellent reliability (Cronbach's Alpha = 0.921 overall). Mann-Whitney U tests indicated significant gender differences on certain items, particularly bias concerns. Due to the small sample size and self-selection bias, findings should be interpreted cautiously. This study provides preliminary insights and highlights the need for human-centric design, transparent governance, and culturally appropriate regulations to support responsible Agentic AI adoption in Indonesia.



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## I. INTRODUCTION

The advancement of artificial intelligence has reached a new milestone with the emergence of Agentic AI. Unlike traditional AI systems that primarily execute specific commands, Agentic AI refers to autonomous systems capable of planning, utilizing external tools, reasoning, and independently pursuing complex goals with minimal human intervention [1],[2],[3].

This paradigm shift enables AI to not only respond to queries but also to proactively plan, adapt, and execute multi-step tasks such as conducting research, managing workflows, and solving complex problems [4],[5],[6].

Despite its promising potential to transform productivity, education, and various sectors, the adoption of Agentic AI raises significant ethical, security, and societal concerns. Issues such as loss of human control, data privacy, algorithmic bias, and accountability in autonomous decision-making have become central to academic and public discourse [7],[8],[9],[10].

Understanding user perceptions is therefore crucial before this technology can be widely implemented in society. This study is grounded in the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), extended with AI-specific constructs related to trust and ethical concerns. While numerous studies have examined perceptions of generative AI globally [11],

research focusing specifically on Agentic AI in emerging economies like Indonesia remains limited [12]. Moreover, cultural factors such as collectivism, religious values, and strong governmental regulatory expectations in Indonesia may uniquely shape public attitudes toward autonomous AI systems.

This exploratory study aims to investigate user perceptions regarding Agentic AI adoption in Indonesia, particularly among digitally literate youth. Specifically, it seeks to examine the balance between perceived benefits (productivity and efficiency) and ethical concerns (privacy, control, and bias). Using an Exploratory Data Analysis (EDA) approach on survey data from 22 respondents, this research evaluates demographic characteristics, score distributions, linear relationships, and gender differences in perceptions [13],[14],[15].

The primary objective of Exploratory Data Analysis (EDA) in this study is to understand the demographic characteristics of the respondents, analyze the score distribution and mean for each statement, and identify correlation patterns between demographic variables and user perceptions toward Agentic AI. Furthermore, this study also aims to illustrate key insights through various types of charts and data visualizations [16],[17].

It is hoped that the findings will provide preliminary insights into the readiness of Indonesian society toward Agentic AI and serve as a reference for developers, policymakers, and academics in fostering a safe, transparent, and human-centric Agentic AI ecosystem [18],[19].

## II. METHODS

This study employed a quantitative exploratory design using a survey method. The primary objective was to investigate user perceptions toward Agentic AI adoption in Indonesia through Exploratory Data Analysis (EDA) supplemented with non-parametric statistical tests [20],[21],[22],[23],[24],[25].

### A. Research Design and Sampling

Data was collected through an online questionnaire created with Google Forms. The questionnaire was distributed via convenience sampling through university networks with WhatsApp groups, and academic social media platforms in Banjarmasin and surrounding areas during May 2026. A total of 22 complete and valid responses were obtained. Due to the exploratory nature of the study and time limitations, convenience sampling was selected. However, this approach may introduce self-selection bias, as the majority of respondents were young, educated, and already familiar with AI tools. Therefore, the findings should be interpreted cautiously and cannot be broadly generalized to the entire Indonesian population.

### B. Instrument Development

At the beginning of the questionnaire, Agentic AI was clearly defined operationally as autonomous AI systems capable of planning, utilizing external tools, reasoning, and independently pursuing complex goals with minimal human intervention.

The questionnaire consisted of two main sections. The first section collected respondents' demographic information, including age range, gender, highest education level, occupation/profession, and frequency of AI tool usage. The second section comprised 20 statements measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). These items were adapted from established theoretical frameworks, including the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and relevant AI trust and ethics literature. Specifically, questions Q1 to Q15 focused on positive aspects such as perceived usefulness, ease of use, trust in autonomy, and productivity enhancement. Meanwhile, questions Q16 to Q20 addressed ethical concerns, including data privacy, loss of human control, algorithmic bias, the need for regulation, and potential long-term impact on human problem-solving skills.

### C. Validity and Reliability

Content validity of the instrument was ensured through expert review by two lecturers in the field of Informatics and Information Technology. Internal consistency reliability was then assessed using Cronbach's Alpha. The analysis yielded an overall Cronbach's Alpha value of 0.921 (Excellent). The Positive Aspects subscale (Q1–Q15) obtained an Alpha value of 0.922 (Excellent), while the Concern Aspects subscale (Q16–Q20) recorded 0.757 (Acceptable). These reliability coefficients indicate that the questionnaire has good internal consistency and is suitable for use in this exploratory study.

### D. Ethical Considerations

This research adhered to ethical standards. Informed consent was obtained from all participants at the start of the questionnaire. Participation was voluntary, anonymous, and respondents could withdraw at any time. No personally identifiable information was collected. All data was stored securely and used only for academic purposes.

### E. Data Preparation

The raw data exported from Google Forms was saved in Microsoft Excel format. Data cleaning was performed to check for missing values (none were found). Demographic variables were converted into categorical data types, while Likert-scale responses were treated as numerical data for statistical analysis. Derived variables were also created, including the mean scores for Positive Aspects (Q1–Q15), Concern Aspects (Q16–Q20), and the overall mean score.

### F. Data Analysis Techniques

Exploratory Data Analysis (EDA) was conducted across univariate, bivariate, and multivariate levels to identify

patterns, distributions, and relationships within the data. Descriptive statistics (mean, median, standard deviation, minimum, maximum, and quartiles) were calculated for each item. Visualizations such as bar plots, box plots, swarm plots, line plots, scatter plots, and correlation heatmaps were generated to present the findings clearly. In addition to EDA, the following non-parametric statistical tests were applied due to the small sample size and non-normal data distribution:

TABEL I  
STATISTICAL ANALYSIS METHODS

Test	Function / Use	Significance Level ( $\alpha$ )
Mann-Whitney U Test	Comparing differences between two independent groups (e.g., Male vs Female)	0.05
Wilcoxon Signed-Rank Test	Comparing paired scores (e.g., Positive Aspects vs Concern Aspects)	0.05
Pearson Correlation	Measuring linear relationships between variables	0.05

All data processing, statistical analysis, and visualizations were performed using the Python programming language with libraries such as pandas, matplotlib, seaborn, and scipy. Due to the limited sample size (n=22), all inferential results are considered exploratory and interpreted with caution.

### III. RESULTS AND DISCUSSION

Based on the analysis of 22 respondents, the majority were young adults below 20 years old (63.6%), female (63.6%), with high school or undergraduate education, and predominantly students. Regarding AI tool usage, 12 respondents (54.5%) reported using AI tools daily, indicating a high level of familiarity among the sample.

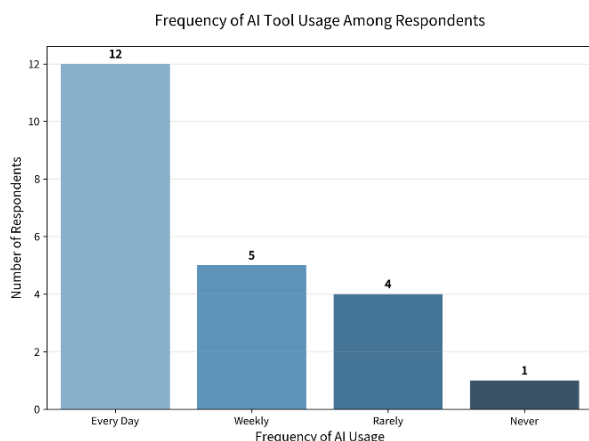


Figure 1. Frequency of AI Tool Usage Among Respondents

As shown in Figure 1, the majority of respondents are active users of AI tools. Out of 22 participants, 12 respondents (54.5%) reported using AI tools such as ChatGPT, Claude, or other AI agents every day, 5 respondents (22.7%) use them weekly, 4 respondents (18.2%) use them rarely, and only 1 respondent (4.5%) has never used any AI tools. This high level of familiarity with generative AI among the predominantly student respondents provides important context for interpreting their perceptions toward more advanced Agentic AI systems.

The Pearson correlation matrix visualized as a heatmap reveals the relationships among the 20 Likert-scale items. Strong positive correlations (indicated by dark red) are predominantly observed within the Positive Aspects group (Q1–Q15), suggesting good internal consistency among items measuring perceived usefulness, trust, and productivity.

In contrast, correlations between Positive Aspects (Q1–Q15) and Concern Aspects (Q16–Q20) are generally weak or slightly negative (shown in white to blue tones). This pattern indicates ambivalence in respondents' perceptions: while they recognize the potential benefits of Agentic AI, such enthusiasm does not necessarily reduce their ethical concerns regarding data privacy, loss of control, and algorithmic bias.

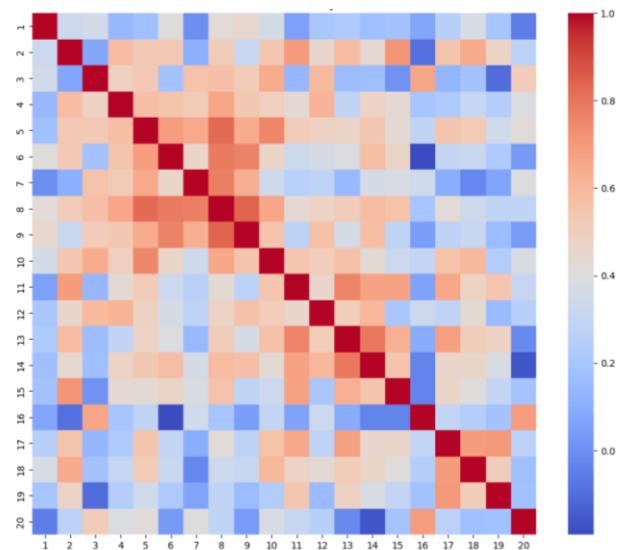


Figure 2. Heatmap correlation between questions

Figure 2 displays the Pearson correlation matrix among the 20 questionnaire items in the form of a heatmap. The dark red diagonal line represents a perfect correlation of 1.0 for each item with itself. Strong positive correlations (dark red) are predominantly found within the Positive Aspects items (Q1–Q15), particularly in groups Q4–Q9 and Q13–Q15. In contrast, correlations between Positive Aspects and Concern Aspects (Q16–Q20) appear weak or slightly negative (white)

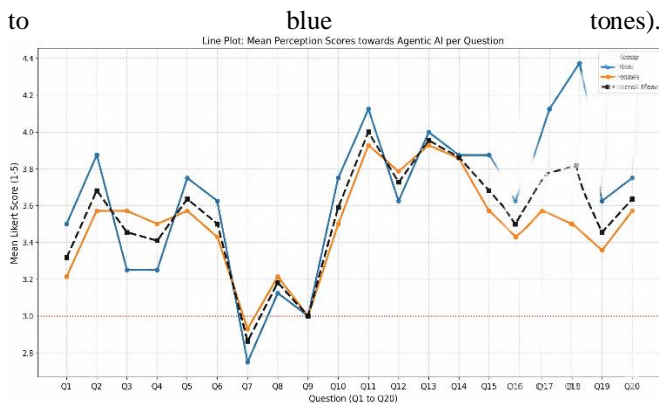


Figure 3. Line plot of mean perception scores.

The line plot compares the mean perception scores across the 20 Likert-scale items. Both male and female respondents exhibited similar fluctuation patterns, with a notable drop below the neutral point (3.0) at Q7. However, male respondents consistently provided higher scores on several items, particularly Q17 and Q18. The Mann-Whitney U test confirmed a statistically significant difference in Q18 ( $p = 0.021$ ), suggesting greater technical confidence among male respondents in this sample.

#### IV. CONCLUSION

This exploratory study has mapped the initial perceptions of Indonesian youth, particularly among digitally literate university students, toward the adoption of Agentic AI. The findings reveal a clear dualism in attitudes: strong enthusiasm regarding the potential of Agentic AI to enhance productivity, efficiency, and creative work, balanced by notable ethical concerns surrounding data privacy, loss of human control, algorithmic bias, and long-term skill degradation. While respondents demonstrated high familiarity with generative AI tools, their perceptions reflect ambivalence appreciating technological capabilities yet demanding stronger safeguards. Gender differences were observed, with males showing relatively higher technical confidence on several items, particularly bias concerns. These results are consistent with global trends but also highlight context-specific expectations in Indonesia, such as stronger calls for regulation and human oversight.

This study has several limitations. The small sample size ( $n=22$ ) and the use of convenience sampling limit the generalizability of the findings. The respondents were predominantly tech-savvy young students, which may not fully represent the broader Indonesian population. In addition, the cross-sectional design only captures perceptions at a single point in time. Based on the findings, several practical recommendations are proposed. Developers should incorporate transparent explanations, human-in-the-loop mechanisms, and “kill-switch” features in Agentic AI systems. Policymakers need to establish clear regulations regarding liability, bias auditing, and data protection that are specifically tailored to Agentic AI and aligned with

Indonesia’s National AI Strategy. Educational institutions should integrate AI ethics and critical AI literacy into curricula to better prepare the younger generation.

Future research should employ larger, more diverse samples using stratified or random sampling techniques, along with mixed-methods approaches and longitudinal designs, to gain deeper insights into evolving perceptions of Agentic AI in Indonesia [11], [13]. In conclusion, realizing the full potential of Agentic AI in Indonesia requires not only technological advancement but also a strong commitment to ethical governance and human-centric design [1],[18].

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