Factors Influencing the Ethical Implementation of Generative AI Use in Education among Undergraduates at the University of Sri Jayewardenepura

Author

A.G.S.S Karunathilake, Supervisor: Mr. P.H.A.B Shantha

Department of Information Technology, Faculty of Management Studies and Commerce,

University of Sri Jayewardenepura

Email: shehansankalpa25@gmail.com

Introduction

The integration of generative artificial intelligence (AI) into educational systems has gained significant traction in recent years, offering new possibilities in personalized learning, automated assessments, and the creation of educational content. However, the ethical implementation of such technologies is a subject of increasing concern, particularly in higher education settings. Generative AI tools, such as ChatGPT and other language models, present ethical challenges relating to privacy, accountability, transparency, and fairness, all of which must be addressed to ensure their responsible use in educational environments.

The rapid adoption of AI technologies has raised questions about data privacy, as these systems require large datasets, often including sensitive student information. Accountability also comes into play, as decisions made by AI systems may significantly impact students' learning experiences. Transparency is essential to ensure that the operations of AI tools are clear to both educators and students, while fairness is crucial to prevent bias in AI algorithms, which may lead to unequal treatment of students.

This study focuses on university of Sri Jayewardenepura undergraduates in Sri Lanka and aims to identify the factors that most significantly influence the ethical implementation of generative AI in education. By understanding these factors,

educational institutions can better integrate AI technologies while maintaining ethical standards.

The research problem centers on the need to balance the benefits of AI in education with the ethical concerns that arise from its use. The objective of the study is to investigate how privacy, accountability, transparency, and fairness impact the ethical use of generative AI tools among undergraduates, providing recommendations for their responsible implementation

Methodology

This research employs a quantitative approach to assess the perceptions of undergraduates regarding the ethical use of generative AI in education. A structured questionnaire was designed to gather data from 100 participants, all of whom are undergraduates at the University of Sri Jayewardenepura. The questionnaire included multiple-choice questions and Likert-scale items, focusing on four key ethical dimensions: privacy, accountability, transparency, and fairness.

The conceptual framework guiding the study was developed from a comprehensive literature review. The hypotheses were derived based on prior studies that identified these four factors as critical to the ethical implementation of AI technologies. The study aimed to test the following hypotheses:

- H1: Privacy positively influences the ethical implementation of generative AI in education.

- H2: Accountability positively influences the ethical implementation of generative AI in education.

- H3: Transparency positively influences the ethical implementation of generative AI in education.

- H4: Fairness positively influences the ethical implementation of generative AI in education.

Data collection was conducted via an online survey platform, and the responses were analyzed using IBM SPSS and SMART PLS. Descriptive statistics were used to summarize the demographic characteristics of the participants, while inferential statistics, including regression analysis, were employed to test the hypotheses. The reliability and validity of the constructs were assessed using Cronbach's alpha and composite reliability scores.

The analysis focused on identifying the strength of the relationships between the independent variables (privacy, accountability, transparency, and fairness) and the dependent variable (ethical implementation of generative AI). A structural equation modeling (SEM) approach was applied to test the overall model fit and the hypothesized relationships.

Results and Discussion

The findings indicate that privacy and accountability are the most significant factors influencing the ethical implementation of generative AI in education. Both factors showed strong positive correlations with ethical AI use, suggesting that concerns about data privacy and accountability are paramount among undergraduates. The results support H1 and H2, with privacy (Path Coefficient = 0.305, $p < 0.001$) and accountability (Path Coefficient = 0.397, $p < 0.001$) demonstrating statistically significant impacts on the ethical use of AI.

Transparency, while positively related to ethical AI use, did not show a statistically significant effect (Path Coefficient = 0.200, $p = 0.260$), thus rejecting H3. This suggests that while transparency is important, it may not be as critical as privacy and accountability in the context of educational AI systems. Students may prioritize their data protection and the accountability of AI decision-making over the need for transparency in AI operations.

Fairness also did not have a significant impact on ethical AI implementation (Path Coefficient = 0.131, $p = 0.055$), indicating that issues of bias and equality, while important, may not be as immediately relevant to undergraduates' perceptions of

AI ethics. This result may be attributed to the limited awareness of fairness-related concerns in AI, or perhaps the existing AI systems used in education have not demonstrated significant bias in practice, leading to a lower prioritization of this factor.

Table 1. Hypothesis Testing Results

Hypothesis	Path Coefficient	T-Value	P-Value	Result
H1: Privacy > Ethical AI	0.305	4.849	0.001	Supported
H2: Accountability > Ethical AI	0.397	6.243	0.001	Supported
H3: Transparency > Ethical AI	0.2	1.127	0.26	Not Supported
H4: Fairness > Ethical AI	0.131	1.917	0.055	Not Supported

Conclusion

This study highlights the importance of privacy and accountability in the ethical implementation of generative AI technologies in educational settings. The findings suggest that educational institutions and AI developers should prioritize these factors when designing and implementing AI systems for learning environments. Privacy concerns, particularly the protection of sensitive student data, must be addressed to foster trust in AI technologies. Likewise, accountability mechanisms need to be established to ensure that the decisions made by AI systems are transparent and that any negative consequences are managed appropriately.

The weaker effects of transparency and fairness observed in this study suggest that these factors, while important, may not be as immediately impactful as privacy and

accountability in influencing the ethical use of AI. Future research should explore why transparency, and fairness did not show significant effects in this context, possibly by examining other educational settings or by increasing awareness of these issues among students.

The limitations of this study include its focus on a single university, which may limit the generalizability of the findings. Future research could expand the scope to include other universities or educational institutions in different countries to provide a more comprehensive understanding of the factors influencing ethical AI implementation. Additionally, further studies could explore the long-term effects of AI ethics on student outcomes and educational practices.

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