

Impact of Generative AI Tool Usage on Students' Ethical Decision-Making: The Mediating Role of AI Literacy and the Moderating Role of Ethical Awareness

By.,

¹**Deepashree**, Research Scholar, Department of Commerce, Bangalore North University, Tamaka Kolar, Karnataka, India

²**Dr. Shobha K**, Associate Professor, Department of Commerce, Govt. First Grade College Hoskote, Bangalore, Karnataka, India

ABSTRACT

The rapid adoption of Generative Artificial Intelligence (GenAI) in higher education has transformed students' academic practices while creating new concerns regarding responsible and ethical use. This study examines the influence of Generative AI Tool Usage on students' Ethical Decision-Making, with particular emphasis on the mediating role of AI Literacy and the moderating role of Ethical Awareness. The study adopted a quantitative, descriptive and analytical research design and analysed primary data collected from 480 students. Data were examined using descriptive statistics, reliability analysis, exploratory factor analysis, Pearson correlation, regression, mediation and moderation analysis. The findings reveal a significant positive influence of Generative AI Tool Usage on Ethical Decision-Making ($B = 0.467, p < 0.001$). AI Literacy significantly mediates this relationship, with a significant indirect effect ($B = 0.209, p < 0.001$), while the remaining significant direct effect indicates partial mediation. Further, Ethical Awareness significantly moderates the relationship between Generative AI Tool Usage and Ethical Decision-Making ($B = 0.149, p < 0.001$). The study concludes that responsible use of Generative AI among students depends not merely on technological exposure but also on AI literacy and ethical awareness. The findings provide implications for developing responsible AI literacy programmes, institutional AI policies and ethical guidelines in higher education.

Keywords: *Generative Artificial Intelligence, AI Literacy, Ethical Awareness, Ethical Decision-Making, Academic Integrity, Higher Education*

CHAPTER 1: INTRODUCTION

1.1 Introduction

The rapid advancement of Artificial Intelligence (AI) has brought significant changes to the higher education sector, particularly through the emergence of Generative Artificial Intelligence (GenAI). Unlike conventional AI applications that primarily analyse existing information or perform predefined tasks, Generative AI systems can create new text, images, code, summaries and other forms of content in response to user prompts. Tools such as ChatGPT, Gemini, Microsoft Copilot and Claude have consequently become increasingly accessible to students for information seeking, content development, problem-solving and academic assistance. Kasneci et al. (2023) argue that large language models offer substantial

educational opportunities while simultaneously creating challenges relating to accuracy, assessment, academic integrity and responsible use.

The growing adoption of Generative AI has therefore created a complex situation for higher education. On one hand, AI tools can facilitate personalised learning, improve productivity, support idea generation and provide immediate feedback. On the other hand, inappropriate dependence on AI may create concerns relating to plagiarism, authorship, misinformation, privacy, bias and the erosion of independent learning. A systematic review by Bond et al. (2024) highlights that the integration of AI into higher education requires greater attention to ethics, collaboration and responsible implementation. Consequently, the educational value of Generative AI cannot be assessed solely in terms of technological functionality; the ethical manner in which students use these technologies is equally important.

1.2 Generative AI and Students in Higher Education

Generative AI has rapidly entered students' academic lives. Students can use these technologies to obtain explanations, generate ideas, summarise complex material, improve written communication, solve problems and obtain assistance with assignments. Kasneci et al. (2023) identify several potential educational applications of large language models, including personalised learning support and assistance with academic tasks. However, the increasing accessibility of such tools has also intensified concerns about whether students are using AI to enhance learning or to bypass essential academic processes. The emergence of ChatGPT has particularly intensified discussions surrounding academic integrity. Cotton et al. (2023) highlight concerns regarding the ability of generative chatbots to facilitate inappropriate assistance in academic assessment. Similarly, Sullivan et al. (2023) emphasise that higher education institutions need to reconsider conventional approaches to academic integrity and student learning in response to Generative AI. Thus, the question is no longer simply whether students use AI, but how they use it and whether they can make responsible decisions while using it.

1.3 Ethical Decision-Making in the Context of Generative AI

Ethical decision-making refers to an individual's ability to recognise ethical concerns, evaluate alternative courses of action and select an appropriate response. In the context of Generative AI, students may encounter several ethical situations, including whether to submit AI-generated content as their own, whether AI-generated information should be trusted without verification, whether confidential information should be entered into an AI system and whether AI assistance should be acknowledged. The ethical dimension of AI has become an important area of scholarly discussion. Floridi and Cowls (2019) propose a framework centred on principles such as beneficence, non-maleficence, autonomy, justice and explicability. Similarly, Jobin et al. (2019), through their analysis of global AI ethics guidelines, identify recurring principles including transparency, fairness, accountability and privacy. These principles are directly relevant to students because their everyday interaction with Generative AI can involve questions of responsibility, accuracy, privacy and academic integrity.

Therefore, students' ethical decision-making should be viewed as an important educational outcome of Generative AI adoption. Technological competence without ethical judgement may increase the possibility of inappropriate use.

1.4 Role of AI Literacy

AI Literacy represents an important competency for students navigating the Generative AI environment. Ng et al. (2021) conceptualise AI literacy as involving knowledge and understanding of AI, its applications and its implications, while also recognising the importance of critical and ethical dimensions. AI literacy therefore extends beyond knowing how to operate an AI tool. A digitally competent student should also be able to evaluate AI-generated information, recognise limitations, identify potential bias and understand the consequences of inappropriate use. Recent research has strengthened the importance of AI literacy as a multidimensional construct. Lintner (2024), in a systematic review of AI literacy scales, highlights the need for reliable approaches to measuring different dimensions of individuals' AI-related competencies. This becomes particularly significant in higher education because students who understand the capabilities and limitations of Generative AI may be better positioned to make informed decisions regarding its use.

The present study therefore proposes AI Literacy as a mediating variable. The underlying assumption is that Generative AI usage may contribute to students' AI literacy, which in turn may influence their ability to make ethically appropriate decisions.

1.5 Role of Ethical Awareness

While AI literacy provides students with knowledge and competency concerning AI, Ethical Awareness determines the extent to which students recognise the ethical implications associated with their actions. A student may possess considerable technical knowledge about Generative AI but still use the technology inappropriately if ethical considerations are not recognised. Ethical awareness is particularly important in areas such as academic integrity, privacy, algorithmic bias, misinformation and responsible attribution. AI ethics frameworks emphasise that responsible AI requires awareness of potential harms and consideration of human values (Floridi et al., 2018; Floridi & Cowls, 2019). Accordingly, the present study considers Ethical Awareness as a moderating variable, proposing that the strength of the relationship between Generative AI Tool Usage and Ethical Decision-Making may vary according to students' level of ethical awareness.

1.6 Need for the Study

The rapid adoption of Generative AI has created a need to understand its implications for students beyond conventional measures such as usefulness, satisfaction or adoption intention. Existing literature has extensively discussed the opportunities and challenges of ChatGPT and Generative AI in education (Lo, 2023; Montenegro-Rueda et al., 2023), while increasing attention has been given to academic integrity and responsible use (Cotton et al., 2023; Bittle & El-Gayar, 2025). However, there remains scope to examine how AI usage translates into ethical decision-making and what role AI literacy and ethical awareness play in this relationship.

This study addresses this gap by developing an integrated empirical model consisting of Generative AI Tool Usage, AI Literacy, Ethical Awareness and Ethical Decision-Making. By examining both mediation and moderation, the study moves beyond a simple direct relationship and provides a more comprehensive explanation of students' ethical responses to Generative AI.

1.7 Significance of the Study

The study has significance for students, faculty members, educational institutions and policymakers. For students, the findings can highlight the importance of combining AI competency with ethical responsibility. For educators, the study can provide insights into designing learning activities that encourage responsible AI use rather than simple technological dependence. For institutions, the findings can support the development of AI policies, ethical guidelines and AI-literacy programmes. At the policy level, the study can contribute to discussions concerning responsible integration of Generative AI within higher education. Overall, the study seeks to demonstrate that successful integration of Generative AI requires more than technological access. As UNESCO's guidance on Generative AI in education and research emphasises, educational institutions need to consider responsible, human-centred and ethically informed approaches to the use of these technologies (Miao & Holmes, 2023).

1.8 Conceptual Orientation of the Study

The study proposes that Generative AI Tool Usage influences Ethical Decision-Making both directly and indirectly through AI Literacy. At the same time, Ethical Awareness is expected to influence the strength of the relationship between Generative AI Tool Usage and Ethical Decision-Making. This conceptualisation provides the foundation for the empirical investigation undertaken in the subsequent chapters.

Thus, the study adopts a responsible-use perspective in which technology, literacy and ethics are interconnected. Rather than viewing Generative AI solely as an educational tool or an academic-integrity threat, the study examines how students' competencies and ethical awareness can shape the consequences of AI engagement.

1.9 Objectives of the Study

The present study is undertaken with the following objectives:

1. To examine the influence of Generative AI Tool Usage on students' Ethical Decision-Making.
2. To assess the mediating role of AI Literacy in the relationship between Generative AI Tool Usage and students' Ethical Decision-Making.
3. To examine the moderating effect of Ethical Awareness on the relationship between Generative AI Tool Usage and students' Ethical Decision-Making.
4. To examine whether students' Ethical Decision-Making differs significantly across selected demographic and Generative AI usage characteristics.

1.10 Hypotheses of the Study

Based on the objectives and the conceptual framework, the following null hypotheses are formulated:

H01: Influence of Generative AI Tool Usage

H01: Generative AI Tool Usage has no significant influence on students' Ethical Decision-Making.

H02: Mediating Role of AI Literacy

H02: AI Literacy does not significantly mediate the relationship between Generative AI Tool Usage and students' Ethical Decision-Making.

H03: Moderating Role of Ethical Awareness

H03: Ethical Awareness does not significantly moderate the relationship between Generative AI Tool Usage and students' Ethical Decision-Making.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

Generative Artificial Intelligence has emerged as a significant technological development in higher education, creating new possibilities for learning while simultaneously raising concerns regarding academic integrity, responsible technology use and ethical decision-making. Existing research has examined Generative AI from multiple perspectives, including educational applications, student adoption, AI literacy, academic integrity and AI ethics. The following review focuses particularly on literature relevant to the present study's four principal constructs: Generative AI Tool Usage, AI Literacy, Ethical Awareness and Ethical Decision-Making.

2.2 Review of Literature

1. Kasneci et al. (2023) – Generative AI and Educational Opportunities

Kasneci et al. (2023) examined the opportunities and challenges associated with large language models such as ChatGPT in education. The authors identified potential benefits including personalised learning, information support, content generation and feedback. At the same time, they highlighted concerns relating to inaccurate information, bias, academic integrity and excessive dependence on AI. The study emphasised the importance of developing students' ability to critically evaluate AI-generated outputs. This provides a theoretical basis for examining the relationship between Generative AI Tool Usage and students' ethical decision-making.

2. Cotton et al. (2023) – ChatGPT and Academic Integrity

Cotton et al. (2023) investigated the implications of ChatGPT for academic integrity in higher education. The study highlighted the possibility of students using generative chatbots to produce academic work without appropriate acknowledgement or intellectual contribution. The authors argued that educational institutions need to reconsider conventional approaches to assessment and integrity in response to Generative AI. Their findings are particularly relevant to the present study because academic integrity constitutes an important dimension of students' ethical decision-making when using AI.

3. Lo (2023) – Impact of ChatGPT on Education

Lo (2023) conducted a rapid review of literature concerning the impact of ChatGPT on education. The review identified potential advantages including improved learning support, accessibility and productivity, alongside challenges involving misinformation, plagiarism and dependency. The study concluded that educators and institutions need to develop appropriate

strategies for responsible implementation. The findings establish the broader educational context for investigating students' Generative AI usage and its ethical implications.

4. Ng et al. (2021) – Conceptualising AI Literacy

Ng et al. (2021) examined the concept of AI literacy and proposed that it extends beyond basic technical knowledge. AI literacy encompasses understanding AI concepts, applying AI appropriately, evaluating AI outputs and recognising its ethical and societal implications. The study provides an important conceptual foundation for the present research because it supports treating AI Literacy as a multidimensional competency rather than simply the ability to operate AI tools.

5. Ng et al. (2021) – AI Literacy and Ethical Issues

In another contribution, Ng et al. (2021) discussed AI literacy in relation to its definition, teaching, evaluation and ethical dimensions. The authors emphasised that learners require both technical knowledge and an understanding of the broader consequences of AI. The study suggests that AI education should incorporate ethical considerations and responsible-use principles. This perspective directly supports the present study's proposition that AI Literacy may act as a mechanism linking Generative AI usage with Ethical Decision-Making.

6. Floridi and Cowls (2019) – Principles of AI Ethics

Floridi and Cowls (2019) proposed a unified framework for AI ethics based on five major principles: beneficence, non-maleficence, autonomy, justice and explicability. Their framework demonstrates that responsible AI use requires consideration of human welfare, potential harm, individual autonomy and fairness. Although the framework is broader than higher education, it provides a strong theoretical foundation for examining Ethical Awareness in the context of students' Generative AI usage.

7. Jobin et al. (2019) – Global AI Ethics Guidelines

Jobin et al. (2019) analysed AI ethics guidelines from different geographical and institutional contexts and identified recurring principles such as transparency, justice, fairness, non-maleficence, responsibility and privacy. The study demonstrated that ethical considerations have become central to AI governance internationally. These principles are relevant to students because their interaction with Generative AI may involve privacy, accuracy, fairness, responsibility and academic integrity.

8. Bond et al. (2024) – AI in Higher Education

Bond et al. (2024) conducted a meta-systematic review of research on AI in higher education. The authors identified considerable growth in AI-related educational research while highlighting the need for greater ethical consideration, methodological rigour and collaboration. The study suggests that AI adoption should not be assessed solely through technological or learning outcomes but should also consider broader ethical and institutional implications. This supports the multidimensional approach adopted in the present study.

9. Lintner (2024) – Measurement of AI Literacy

Lintner (2024) systematically reviewed AI literacy scales and highlighted the increasing importance of developing valid and reliable approaches for measuring AI-related competencies. The review demonstrated that AI literacy encompasses multiple dimensions and should not be reduced to simple familiarity with AI technologies. This literature is particularly relevant to the present research because it supports the measurement of AI Literacy as a distinct construct and its proposed mediating role.

10. Kajiwara and Kawabata (2024) – AI Literacy and Ethical Use

Kajiwara and Kawabata (2024) examined AI literacy in relation to students' acceptance and understanding of AI ethics. Their findings highlight the importance of ethical principles in shaping students' perceptions and responsible use of AI. The study indicates that AI literacy programmes should incorporate ethical considerations rather than focus exclusively on technical competencies. This provides direct support for examining the interaction between AI Literacy and Ethical Awareness in the present study.

11. Bittle and El-Gayar (2025) – Generative AI and Academic Integrity

Bittle and El-Gayar (2025) systematically examined Generative AI and academic integrity in higher education. Their review highlighted concerns surrounding AI-assisted academic misconduct while also recognising opportunities for using AI constructively in education. The authors emphasised the importance of developing institutional policies, student awareness and responsible-use practices. Their findings reinforce the relevance of Ethical Decision-Making and Academic Integrity Orientation within the present research framework.

12. Reed et al. (2026) – AI Literacy and Ethical Judgment

Reed et al. (2026) examined the relationship between AI literacy and students' ethical judgment concerning Generative AI using scenario-based assessment. The study provides particularly relevant evidence for the present research because it connects students' understanding of AI with their ability to make ethical judgements about its use. The findings strengthen the argument that AI literacy is not merely a technical competency but may contribute directly to responsible and ethical decision-making.

2.3 Research Gap

The review of existing literature reveals several important gaps.

1. Limited Integration of the Major Constructs

Existing studies have generally examined Generative AI adoption, AI literacy, academic integrity or AI ethics separately. There is comparatively less empirical work integrating Generative AI Tool Usage, AI Literacy, Ethical Awareness and Ethical Decision-Making within a single conceptual model.

2. Limited Examination of Ethical Decision-Making as an Outcome

Much of the existing literature focuses on AI acceptance, perceived usefulness, learning outcomes or academic integrity. Comparatively less attention has been given to students' Ethical Decision-Making as a specific outcome of Generative AI usage.

3. Insufficient Attention to the Mediating Role of AI Literacy

Although AI literacy is increasingly recognised as an important student competency, relatively limited empirical research examines whether AI Literacy explains the relationship between Generative AI usage and Ethical Decision-Making.

4. Limited Research on Ethical Awareness as a Moderator

Existing AI-ethics literature establishes the importance of ethical awareness, but relatively few empirical studies examine whether Ethical Awareness changes the strength of the relationship between Generative AI Tool Usage and Ethical Decision-Making.

5. Need for Student-Level Empirical Evidence

A substantial proportion of the literature consists of conceptual papers, systematic reviews and policy discussions. There remains a need for empirical research based on student-level data to understand how actual Generative AI engagement relates to ethical behaviour.

6. Need for Context-Specific Evidence

The rapid evolution of Generative AI means that findings from the early ChatGPT period may not fully capture contemporary student behaviour. Recent research is therefore needed to understand the changing relationship between AI usage, AI literacy and ethical judgement.

7. Need for More Comprehensive Statistical Models

Many existing studies rely primarily on descriptive statistics, correlations or direct relationships. The present study addresses this methodological gap by examining direct, mediating and moderating relationships within an integrated empirical framework.

2.4 Problem Statement

The rapid adoption of Generative AI tools has transformed students' academic practices by providing convenient access to information, content generation, problem-solving and learning assistance. While these technologies offer considerable educational benefits, their increasing use has simultaneously created concerns relating to academic integrity, plagiarism, misinformation, privacy, bias, accountability and excessive dependence. Previous research has extensively discussed the opportunities and challenges of Generative AI in education (Kasneci et al., 2023; Lo, 2023), while growing attention has been given to academic integrity and responsible AI use (Cotton et al., 2023; Bittle & El-Gayar, 2025).

However, the central problem is that increased access to and usage of Generative AI does not necessarily ensure ethical use. Students may possess the technical ability to operate AI tools without adequately understanding their limitations, ethical implications or potential consequences. AI literacy therefore becomes important because responsible AI engagement requires students to understand, critically evaluate and appropriately apply AI-generated information (Ng et al., 2021; Lintner, 2024).

At the same time, students' level of Ethical Awareness may determine how they respond to ethical challenges associated with Generative AI. Existing AI ethics frameworks emphasise principles such as responsibility, fairness, transparency, autonomy and non-maleficence (Floridi & Cows, 2019; Jobin et al., 2019). Nevertheless, there remains insufficient empirical evidence regarding whether ethical awareness changes the relationship between students' AI usage and their ethical decision-making.

Therefore, the present study addresses this problem by examining whether Generative AI Tool Usage influences students' Ethical Decision-Making, whether AI Literacy mediates this relationship, and whether Ethical Awareness moderates the relationship. By integrating these variables into a single empirical framework, the study seeks to provide a more comprehensive understanding of how students can engage with Generative AI in an informed, responsible and ethically appropriate manner.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

The study adopted a quantitative, descriptive and analytical research design to examine the impact of Generative AI Tool Usage on students' Ethical Decision-Making. The descriptive component was used to understand respondents' demographic characteristics and AI usage patterns, while the analytical component was employed to examine relationships among Generative AI Tool Usage, AI Literacy, Ethical Awareness and Ethical Decision-Making.

3.2 Population and Sample

The population of the study comprised students pursuing higher education who had exposure to Generative AI tools for academic purposes. A total of 480 valid responses were considered for the study. Respondents were drawn from different programmes, disciplines and institutional types to obtain adequate representation of the student population.

A non-probability sampling technique was adopted for selecting respondents based on their accessibility and relevance to the objectives of the study.

3.3 Sources and Collection of Data

The study primarily relied on primary data collected through a structured questionnaire. Secondary sources, including research articles, books, reports and policy documents, were used to establish the theoretical foundation and develop the research framework.

The questionnaire consisted of demographic questions, Generative AI usage-related questions and statements measuring the principal study constructs.

3.4 Measurement of Variables

The study examined four principal variables:

- ❑ **Generative AI Tool Usage (GAU):** Represents students' extent of using Generative AI for academic activities.
- ❑ **AI Literacy (AIL):** Represents students' knowledge, understanding and ability to critically evaluate and use AI.
- ❑ **Ethical Awareness (EAW):** Represents students' awareness of ethical concerns such as privacy, plagiarism, bias and academic integrity.
- ❑ **Ethical Decision-Making (EDM):** Represents students' ability to identify and respond appropriately to ethical issues arising from AI use.

Academic Integrity Orientation (AIO) was also included as a supporting construct.

The attitudinal statements were measured using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The conceptualisation of AI literacy was informed by existing literature emphasising technical, critical and ethical competencies (Ng et al., 2021; Lintner, 2024).

3.5 Conceptual Framework

The study proposes that Generative AI Tool Usage influences Ethical Decision-Making, both directly and indirectly through AI Literacy. Further, Ethical Awareness moderates the relationship between Generative AI Tool Usage and Ethical Decision-Making.

The conceptual relationships are represented as:

Generative AI Tool Usage → Ethical Decision-Making

Generative AI Tool Usage → AI Literacy → Ethical Decision-Making

Generative AI Tool Usage × Ethical Awareness → Ethical Decision-Making

This framework is consistent with the increasing emphasis on AI literacy and ethical responsibility in higher education (Floridi & Cows, 2019; Ng et al., 2021; Bond et al., 2024).

3.6 Reliability and Validity

The reliability of the measurement instrument was assessed using Cronbach's Alpha. The alpha coefficients ranged from 0.857 to 0.914, indicating satisfactory to excellent internal consistency across all constructs.

The suitability of the dataset for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity. The KMO value was 0.947, while Bartlett's Test was statistically significant ($\chi^2 = 9460.97$, $df = 666$, $p < 0.001$). Five factors were extracted, explaining 61.10% of the total variance, thereby supporting the factorability of the data.

3.7 Statistical Techniques Used

The collected data were analysed using appropriate descriptive and inferential statistical techniques:

Purpose	Statistical Technique
Demographic and AI usage profile	Frequency and Percentage
Descriptive assessment	Mean and Standard Deviation
Scale reliability	Cronbach's Alpha
Construct validation	Exploratory Factor Analysis
Relationship among variables	Pearson Correlation
Influence of GAU on EDM	Regression Analysis
Influence of GAU on AIL	Regression Analysis
Mediating role of AIL	Mediation Analysis
Moderating role of EAW	Moderation Analysis
Two-group comparison	Independent-samples t-test
Multiple-group comparison	One-way ANOVA
Overall hypothesis assessment	Hypothesis Testing

The statistical significance of the results was evaluated primarily at the 5% level ($p < 0.05$).

3.8 Ethical Considerations

The study followed basic research-ethics principles relating to voluntary participation, confidentiality and responsible handling of respondents' information. The analysis was conducted using aggregated data, without identifying individual respondents. Particular attention was given to ethical issues surrounding Generative AI, including academic integrity, privacy, misinformation and responsible use.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATIONS

Table 4.1: Demographic Profile of the Respondents

Demographic Variable	Category	Frequency	Percentage
Gender	Male	249	51.88
	Female	220	45.83
	Other/Prefer not to say	11	2.29
Age	18–20 years	129	26.88
	21–23 years	191	39.79
	24–26 years	105	21.88
	27–30 years	55	11.46
Programme	Undergraduate	283	58.96
	Postgraduate	147	30.63
	Ph.D.	50	10.42
Year of Study	First Year	157	32.71
	Second Year	156	32.50
	Third Year	108	22.50
	Fourth Year	51	10.62
	Fifth Year	8	1.67
Discipline	Commerce/Management	130	27.08
	Engineering/Technology	81	16.88
	Science	74	15.42
	Arts/Humanities	65	13.54
	Education	44	9.17
	Social Sciences	44	9.17
	Other	42	8.75
Institution Type	University	176	36.67
	Autonomous College	144	30.00
	Affiliated College	160	33.33
Total		480	100.00

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Table 4.1 presents the demographic profile of the 480 respondents. The sample is relatively balanced by gender, with males constituting 51.88% and females 45.83%. Respondents aged 21–23 years form the largest age group (39.79%), indicating substantial representation of young adult learners. Undergraduate students constitute the majority (58.96%), followed by postgraduates (30.63%) and Ph.D. scholars (10.42%). Commerce/Management accounts for the largest disciplinary group (27.08%). Further, universities represent 36.67% of respondents, followed by affiliated colleges (33.33%) and autonomous colleges (30.00%). Overall, the sample demonstrates adequate representation across major demographic and academic categories, supporting examination of students' experiences with Generative AI and associated ethical considerations. Recent research similarly highlights the importance of student characteristics and educational context in understanding AI literacy and ethical engagement (Kasneci et al., 2023; Bond et al., 2024).

Table 4.2: Generative AI Usage Profile of the Respondents

AI Usage Variable	Category	Frequency	Percentage
AI Experience	< 6 months	82	17.08
	6–12 months	93	19.38
	1–2 years	159	33.12
	> 2 years	146	30.42
AI Use Frequency	Rarely	64	13.33
	Monthly	65	13.54
	Weekly	133	27.71
	Several times a week	133	27.71
	Daily	85	17.71
Primary Generative AI Tool	ChatGPT	219	45.62
	Gemini	99	20.62
	Microsoft Copilot	47	9.79
	Claude	44	9.17
	Perplexity	44	9.17
	Other	27	5.62
Ethical AI Training	Yes	220	45.83
	No	260	54.17
Total		480	100.00

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Table 4.2 presents the Generative AI usage profile of the 480 respondents. A substantial proportion of students reported 1–2 years of AI experience (33.12%), while 30.42% had more than two years of experience, indicating considerable familiarity with Generative AI tools. Regarding frequency, 27.71% used AI several times a week and another 27.71% used it weekly, demonstrating regular academic engagement. ChatGPT was the most commonly used tool (45.62%), followed by Gemini (20.62%). However, only 45.83% reported receiving ethical AI training, while 54.17% had not received such training. This highlights a potential gap between increasing AI adoption and formal preparation for responsible and ethical AI use, consistent with concerns identified in recent higher-education literature (Kasneci et al., 2023; Miao & Holmes, 2023; Bittle & El-Gayar, 2025).

Table 4.3: Descriptive Statistics of the Study Variables

Sl. No.	Study Variable	No. of Items	Mean	Std. Deviation	Minimum	Maximum
1	Generative AI Tool Usage (GAU)	8	3.003	1.223	1	5
2	AI Literacy (AIL)	8	2.996	1.216	1	5
3	Ethical Awareness (EAW)	8	3.003	1.205	1	5
4	Ethical Decision-Making (EDM)	8	3.004	1.209	1	5
5	Academic Integrity Orientation (AIO)	5	2.998	1.217	1	5

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The variables were measured using a five-point Likert scale, where 1 represents the lowest level and 5 represents the highest level.

Table 4.3 presents the descriptive statistics of the major study variables. The mean scores are closely clustered around 3.00, indicating a moderate level of Generative AI Tool Usage, AI Literacy, Ethical Awareness, Ethical Decision-Making and Academic Integrity Orientation among the respondents. Ethical Decision-Making recorded the highest mean (3.004), followed closely by Generative AI Tool Usage (3.003) and Ethical Awareness (3.003). AI Literacy

recorded a mean of 2.996, while Academic Integrity Orientation recorded 2.998. The standard deviations range from 1.205 to 1.223, indicating reasonable variation in respondents' perceptions. These findings suggest that students demonstrate moderate engagement with AI and related ethical competencies, supporting the need to examine the relationships among these constructs (Ng et al., 2021; Kasneci et al., 2023; Lintner, 2024).

Table 4.4: Item-wise Descriptive Statistics of Generative AI Tool Usage

Sl. No.	Statement	Mean	Std. Deviation
1	Frequency of using generative AI tools for academic activities	3.010	1.205
2	Extent of using generative AI tools for academic activities	2.998	1.235
3	Use of generative AI tools for obtaining academic information	3.015	1.217
4	Use of generative AI tools for generating or improving academic content	3.015	1.227
5	Dependence on generative AI tools for completing academic tasks	3.000	1.236
6	Use of generative AI tools for solving academic problems	2.983	1.228
7	Use of generative AI tools for improving the quality of academic work	3.000	1.223
8	Overall reliance on generative AI tools in academic activities	3.002	1.223

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The statements were measured using a five-point Likert scale, where higher scores indicate greater usage of Generative AI tools.

Table 4.4 presents the item-wise descriptive statistics of Generative AI Tool Usage among the respondents. The mean scores range from 2.983 to 3.015, indicating a broadly moderate level of usage across all measured aspects. The highest mean was recorded for obtaining academic information and generating or improving academic content (3.015 each), suggesting that these are prominent applications of Generative AI among students. Conversely, using AI for solving academic problems recorded the lowest mean (2.983). Kasneci et al. (2023) note that Generative AI can support information seeking, content generation and problem-solving in education, while Miao and Holmes (2023) emphasise the need for responsible and purposeful use. The relatively similar standard deviations (1.205–1.236) indicate comparable variation across the individual usage dimensions.

Table 4.5: Descriptive Statistics of AI Literacy, Ethical Awareness and Ethical Decision-Making

Sl. No.	Study Variable	No. of Items	Mean	Std. Deviation
1	AI Literacy (AIL)	8	2.996	1.216
2	Ethical Awareness (EAW)	8	3.003	1.205
3	Ethical Decision-Making (EDM)	8	3.004	1.209

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The constructs were measured using a five-point Likert scale, where higher mean scores indicate higher levels of the respective construct.

Table 4.5 presents the descriptive statistics of AI Literacy, Ethical Awareness and Ethical Decision-Making. The mean scores are almost identical, ranging from 2.996 to 3.004, indicating a moderate level across the three constructs. Ethical Decision-Making recorded the highest mean (3.004), followed by Ethical Awareness (3.003), while AI Literacy recorded the lowest (2.996). The findings suggest that respondents possess a reasonable but not particularly high level of AI-related literacy and ethical competence. Ng et al. (2021) emphasise that AI literacy involves not only understanding AI but also critically evaluating its outputs and implications. Similarly, recent research highlights the importance of AI literacy and ethical

awareness in promoting responsible student engagement with Generative AI (Lintner, 2024). The standard deviations, ranging from 1.205 to 1.216, indicate moderate variability in responses.

Table 4.6: Reliability Analysis of the Study Constructs

Sl. No.	Construct	No. of Items	Cronbach's Alpha
1	Generative AI Tool Usage (GAU)	8	0.905
2	AI Literacy (AIL)	8	0.909
3	Ethical Awareness (EAW)	8	0.894
4	Ethical Decision-Making (EDM)	8	0.914
5	Academic Integrity Orientation (AIO)	5	0.857

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: Cronbach's Alpha values above 0.70 indicate acceptable internal consistency of the measurement scales.

Table 4.6 presents the reliability analysis of the study constructs using Cronbach's Alpha. All five constructs demonstrate strong internal consistency, with alpha values ranging from 0.857 to 0.914. Ethical Decision-Making records the highest reliability ($\alpha = 0.914$), followed by AI Literacy ($\alpha = 0.909$) and Generative AI Tool Usage ($\alpha = 0.905$). Ethical Awareness also demonstrates high reliability ($\alpha = 0.894$), while Academic Integrity Orientation records an acceptable-to-high value ($\alpha = 0.857$). Since all coefficients exceed the commonly accepted 0.70 threshold, the measurement scales can be considered reliable. AI-literacy research also emphasises the importance of reliable multidimensional measurement when assessing students' competencies and responsible AI engagement (Ng et al., 2021; Lintner, 2024). Thus, the constructs are suitable for subsequent inferential analysis.

Table 4.7: Exploratory Factor Analysis – Sampling Adequacy and Factor Extraction

Particulars	Value
Kaiser-Meyer-Olkin (KMO) Measure	0.947
Bartlett's Test of Sphericity – Chi-square	9460.97
Degrees of Freedom	666
Significance (p-value)	< 0.001
Number of Factors Extracted	5
Total Variance Explained	61.10%

Factor-wise Variance Explained

Factor	Eigenvalue	Variance Explained (%)	Cumulative Variance (%)
1	10.889	29.43	29.43
2	4.780	12.92	42.35
3	2.429	6.57	48.92
4	2.345	6.34	55.25
5	2.162	5.84	61.10

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The KMO value of 0.947 indicates excellent sampling adequacy, while Bartlett's Test is statistically significant ($p < 0.001$), confirming that the correlation matrix is suitable for factor analysis. Five factors with eigenvalues greater than 1 were extracted, accounting for 61.10% of the total variance.

Table 4.7 assesses the suitability of the data for factor analysis. The KMO value of 0.947 indicates excellent sampling adequacy, suggesting that the sample of 480 respondents is highly appropriate for identifying underlying factor structures. Bartlett's Test of Sphericity is statistically significant ($\chi^2 = 9460.97$, $df = 666$, $p < 0.001$), confirming that the correlation

matrix contains sufficient relationships among the measurement items for factor analysis. Five factors with eigenvalues greater than one were extracted, collectively explaining 61.10% of the total variance. This indicates that the extracted factors adequately represent the information contained in the observed items. The findings support the construct structure used in the study and provide empirical justification for subsequent analyses. The strong factorability is consistent with established approaches to AI-literacy measurement (Ng et al., 2021; Lintner, 2024).

Table 4.8: Pearson Correlation Matrix among the Study Variables

Study Variable	GAU	AIL	EAW	EDM	AIO
Generative AI Tool Usage (GAU)	1.000	0.504	0.020	0.463	0.263
AI Literacy (AIL)	0.504	1.000	0.155	0.540	0.344
Ethical Awareness (EAW)	0.020	0.155	1.000	0.296	0.261
Ethical Decision-Making (EDM)	0.463	0.540	0.296	1.000	0.349
Academic Integrity Orientation (AIO)	0.263	0.344	0.261	0.349	1.000

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: GAU = Generative AI Tool Usage; AIL = AI Literacy; EAW = Ethical Awareness; EDM = Ethical Decision-Making; AIO = Academic Integrity Orientation. Pearson’s correlation coefficient ranges from –1 to +1. Table 4.8 presents the Pearson correlation coefficients among the major study variables. Generative AI Tool Usage is positively correlated with AI Literacy ($r = 0.504$) and Ethical Decision-Making ($r = 0.463$), indicating moderate positive relationships. AI Literacy demonstrates the strongest correlation with Ethical Decision-Making ($r = 0.540$), suggesting that students with greater AI literacy tend to demonstrate stronger ethical decision-making. Ethical Awareness also shows a positive relationship with Ethical Decision-Making ($r = 0.296$), although the association is relatively modest. Interestingly, the correlation between Generative AI Tool Usage and Ethical Awareness is negligible ($r = 0.020$), indicating that usage alone may not necessarily enhance ethical awareness. These findings support examining AI literacy as a potential mechanism and ethical awareness as a contextual factor, consistent with recent discussions on responsible AI use in education (Kasneci et al., 2023; Lintner, 2024).

Table 4.9: Regression Analysis of the Influence of Generative AI Tool Usage on Ethical Decision-Making

Predictor	B	Std. Error	t-value	p-value
Constant	1.602	0.129	12.446	<0.001
Generative AI Tool Usage (GAU)	0.467	0.041	11.415	<0.001

Model Summary

R	R ²	Adjusted R ²	F-value	p-value
0.463	0.214	0.213	130.298	<0.001

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: Dependent Variable: Ethical Decision-Making (EDM). The regression model is statistically significant at the 1% level.

Table 4.9 examines the influence of Generative AI Tool Usage on Ethical Decision-Making through regression analysis. The results indicate a positive and statistically significant relationship, with Generative AI Tool Usage showing a regression coefficient of $B = 0.467$ and a t-value of 11.415 ($p < 0.001$). Thus, greater use of Generative AI tools is associated with higher levels of students’ Ethical Decision-Making. The model is statistically significant ($F =$

130.298, $p < 0.001$) and explains 21.4% of the variance in Ethical Decision-Making ($R^2 = 0.214$). This finding supports the view that AI can influence students' academic practices and decision processes, although responsible use remains important (Kasneci et al., 2023; Cotton et al., 2023). Therefore, H01 is rejected, establishing a significant influence of Generative AI Tool Usage on Ethical Decision-Making.

Table 4.10: Regression Analysis of the Influence of Generative AI Tool Usage on AI Literacy

Predictor	B	Std. Error	t-value	p-value
Constant	1.477	0.125	11.838	<0.001
Generative AI Tool Usage (GAU)	0.506	0.040	12.756	<0.001

Model Summary

R	R ²	Adjusted R ²	F-value	p-value
0.504	0.254	0.252	162.721	<0.001

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: Dependent Variable: AI Literacy (AIL). The regression model is statistically significant at the 1% level.

Table 4.10 examines the influence of Generative AI Tool Usage on AI Literacy through regression analysis. The results reveal a positive and statistically significant influence, with Generative AI Tool Usage recording a regression coefficient of $B = 0.506$ and a t-value of 12.756 ($p < 0.001$). This indicates that increased engagement with Generative AI tools is associated with higher levels of AI Literacy among students. The regression model is statistically significant ($F = 162.721$, $p < 0.001$) and explains 25.4% of the variation in AI Literacy ($R^2 = 0.254$). This finding supports the argument that meaningful interaction with AI tools can contribute to students' understanding and critical evaluation of AI capabilities (Ng et al., 2021), while recent research emphasises AI literacy as an important competency for effective and responsible engagement with Generative AI (Lintner, 2024). Overall, the findings provide empirical support for AI Literacy as a potential mediating mechanism in the proposed model.

Table 4.11: Mediation Analysis of AI Literacy in the Relationship between Generative AI Tool Usage and Ethical Decision-Making

Mediation Path	Effect (B)	Std. Error	Test Statistic	p-value
Path a : GAU → AIL	0.506	0.040	12.756	<0.001
Path b : AIL → EDM	0.413	0.043	9.552	<0.001
Direct Effect c' : GAU → EDM	0.258	0.043	5.936	<0.001
Total Effect c : GAU → EDM	0.467	0.041	11.415	<0.001
Indirect Effect a × b	0.209	0.027	7.646	<0.001

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: GAU = Generative AI Tool Usage; AIL = AI Literacy; EDM = Ethical Decision-Making. The indirect effect is statistically significant, indicating that AI Literacy mediates the relationship between Generative AI Tool Usage and Ethical Decision-Making. The mediator model explains 25.4% of the variance in AI Literacy, while the outcome model explains 34.0% of the variance in Ethical Decision-Making.

Table 4.11 examines the mediating role of AI Literacy in the relationship between Generative AI Tool Usage and Ethical Decision-Making. The results show that Generative AI Tool Usage significantly predicts AI Literacy (Path a: $B = 0.506$, $p < 0.001$), while AI Literacy significantly predicts Ethical Decision-Making (Path b: $B = 0.413$, $p < 0.001$). The indirect effect is positive

and significant ($B = 0.209$, $p < 0.001$), confirming that AI Literacy acts as an important mechanism through which AI usage influences students' ethical decision-making. Importantly, the direct effect remains significant ($B = 0.258$, $p < 0.001$), indicating partial mediation rather than full mediation. This reinforces the importance of developing students' AI literacy for responsible AI engagement, as emphasised by Ng et al. (2021) and Lintner (2024). Accordingly, H02 is rejected.

Table 4.12: Moderating Effect of Ethical Awareness on the Relationship between Generative AI Tool Usage and Ethical Decision-Making

Predictor	B	Std. Error	t-value	p-value
Constant	3.001	0.036	82.962	<0.001
Generative AI Tool Usage (GAU)	0.469	0.038	12.257	<0.001
Ethical Awareness (EAW)	0.302	0.040	7.612	<0.001
Interaction (GAU $\times$ EAW)	0.149	0.039	3.810	<0.001

Model Summary

R	R ²	Adjusted R ²	F-value	p-value
0.563	0.317	0.313	73.733	<0.001

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The interaction term (GAU $\times$ EAW) is statistically significant, indicating that Ethical Awareness significantly moderates the relationship between Generative AI Tool Usage and Ethical Decision-Making. The model explains 31.7% of the variance in Ethical Decision-Making.

Table 4.12 examines the moderating effect of Ethical Awareness on the relationship between Generative AI Tool Usage and Ethical Decision-Making. The results show that Generative AI Tool Usage ($B = 0.469$, $p < 0.001$) and Ethical Awareness ($B = 0.302$, $p < 0.001$) both have significant positive effects on Ethical Decision-Making. More importantly, the interaction term between Generative AI Tool Usage and Ethical Awareness is statistically significant ($B = 0.149$, $t = 3.810$, $p < 0.001$), confirming that Ethical Awareness significantly changes the strength of the relationship between AI usage and ethical decision-making. The overall model is significant ($F = 73.733$, $p < 0.001$) and explains 31.7% of the variance in Ethical Decision-Making. This supports the importance of ethical awareness in responsible AI engagement, consistent with AI-ethics frameworks emphasising awareness of risks and responsibilities (Floridi & Cows, 2019; Jobin et al., 2019). Therefore, H03 is rejected.

Table 4.13: Differences in Ethical Decision-Making across Selected Demographic and Generative AI Usage Groups

Variable	Groups	Statistical Test	Mean / Group 1	Mean / Group 2	Test Statistic	p-value
Gender	Male vs. Female	Independent-samples t-test	2.989	3.003	-0.157	0.875
Programme	UG / PG / Ph.D.	One-way ANOVA	2.976	3.071	0.517	0.597
AI Use Frequency	5 categories	One-way ANOVA	—	—	0.201	0.938
AI Experience	4 categories	One-way ANOVA	—	—	0.275	0.844
Ethical AI Training	Yes vs. No	Independent-samples t-test	2.984	3.021	-0.431	0.667

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: The dependent variable is Ethical Decision-Making (EDM). The results indicate that Ethical Decision-Making does not differ significantly across the selected demographic and Generative AI usage groups, as all obtained p-values are greater than 0.05.

Table 4.13 examines whether students' Ethical Decision-Making differs across selected demographic and Generative AI usage characteristics. The results indicate that none of the examined group differences are statistically significant at the 5% level. Gender does not produce a significant difference ($t = -0.157$, $p = 0.875$), while differences across programme categories are also insignificant ($F = 0.517$, $p = 0.597$). Similarly, Ethical Decision-Making does not significantly vary according to AI Use Frequency ($F = 0.201$, $p = 0.938$) or AI Experience ($F = 0.275$, $p = 0.844$). Respondents with and without Ethical AI Training also show no significant difference ($t = -0.431$, $p = 0.667$). These findings suggest that ethical decision-making is relatively consistent across the examined respondent groups, indicating that AI-related competencies and ethical factors may be more important determinants than demographic characteristics (Kasneci et al., 2023; Miao & Holmes, 2023).

Table 4.14: Summary of Hypothesis Testing

Hypothesis	Hypothesis Statement	Statistical Test	Test Statistic	p-value	Decision
H01	Generative AI Tool Usage has no significant influence on students' Ethical Decision-Making.	Regression Analysis	$t = 11.415$	<0.001	Reject H01
H02	AI Literacy does not significantly mediate the relationship between Generative AI Tool Usage and Ethical Decision-Making.	Mediation Analysis	Indirect Effect = 0.209	<0.001	Reject H02
H03	Ethical Awareness does not significantly moderate the relationship between Generative AI Tool Usage and Ethical Decision-Making.	Moderation Analysis	$t = 3.810$	<0.001	Reject H03

Source: Compiled by the researcher based on the primary data collected from 480 respondents.

Note: H01, H02 and H03 represent the respective null hypotheses. The results indicate statistically significant direct, mediating and moderating effects at the 1% level.

Table 4.14 summarises the hypothesis testing outcomes of the study. The regression analysis confirms that Generative AI Tool Usage significantly influences Ethical Decision-Making ($t = 11.415$, $p < 0.001$), leading to rejection of H01. The mediation analysis establishes a significant indirect effect of AI Literacy ($B = 0.209$, $p < 0.001$), confirming that AI Literacy partially mediates the relationship between AI usage and Ethical Decision-Making; hence, H02 is rejected. Further, the significant interaction effect between Generative AI Tool Usage and Ethical Awareness ($B = 0.149$, $p < 0.001$) confirms the moderating role of Ethical Awareness, resulting in rejection of H03. Overall, the findings demonstrate that ethical decision-making is shaped not only by AI usage but also by students' AI literacy and ethical awareness, reinforcing the importance of responsible AI education (Ng et al., 2021; Lintner, 2024; Floridi & Cowls, 2019).

CHAPTER 5: MAJOR FINDINGS AND SUGGESTIONS

5.1 Major Findings of the Study

1. Profile of the Respondents

The study was based on 480 respondents, with males constituting 51.88% and females 45.83%. The largest age group was 21–23 years (39.79%), while undergraduate students represented the majority (58.96%). The diversity of the sample provides an appropriate basis for examining students' engagement with Generative AI across different academic backgrounds.

2. Considerable Experience with Generative AI

The findings indicate substantial familiarity with Generative AI, with 33.12% of respondents reporting 1–2 years of experience and 30.42% reporting more than two years. This reflects the increasing integration of Generative AI into students' academic activities. The growing normalisation of these technologies in higher education has also been highlighted in recent research (Bond et al., 2024; Kasneci et al., 2023).

3. Regular Academic Use of Generative AI

Generative AI is being used regularly for academic purposes, with 27.71% of respondents using AI weekly and another 27.71% using it several times a week. This pattern is consistent with recent evidence showing that students increasingly employ chatbots for assessment-related and learning activities (Cotton et al., 2023; *The rapid rise of generative AI*, 2024).

4. ChatGPT as the Dominant AI Tool

ChatGPT emerged as the most frequently used Generative AI tool, accounting for 45.62% of respondents, followed by Gemini at 20.62%. The prominence of ChatGPT reflects its widespread adoption for information retrieval, content generation and learning support, applications also identified in recent educational AI research (Kasneci et al., 2023).

5. Moderate Level of AI-Related Constructs

Generative AI Tool Usage, AI Literacy, Ethical Awareness and Ethical Decision-Making recorded mean scores close to 3.00 on the five-point scale, indicating moderate levels across the principal constructs. This suggests that students have developed a reasonable level of familiarity and competency but still have considerable scope for improvement. AI literacy research emphasises that effective AI competency should encompass understanding, application, evaluation and socio-ethical awareness (Ng et al., 2021; *Artificial intelligence literacy for technology education*, 2024).

6. Gap in Ethical AI Training

Only 45.83% of respondents reported receiving ethical AI training, while 54.17% had not received such training. This represents an important gap because technological familiarity does not necessarily imply ethical competence. Kajiwaru and Kawabata (2024) demonstrated that AI-literacy education incorporating ethical principles can improve students' understanding of ethical AI use, particularly in decision-support contexts.

7. High Reliability of the Measurement Scales

The measurement constructs demonstrated strong internal consistency, with Cronbach's Alpha values ranging from 0.857 to 0.914. These results establish that the scales used to measure Generative AI Tool Usage, AI Literacy, Ethical Awareness, Ethical Decision-Making and Academic Integrity Orientation possess satisfactory reliability and are suitable for subsequent statistical analysis.

8. Suitability of Data for Factor Analysis

The KMO value of 0.947 and statistically significant Bartlett's Test ($p < 0.001$) confirmed the suitability of the dataset for factor analysis. Five factors collectively explained 61.10% of the total variance, providing empirical support for the underlying measurement structure.

9. Positive Association between AI Usage and AI Literacy

Generative AI Tool Usage demonstrated a moderate positive correlation with AI Literacy ($r = 0.504$). This indicates that greater engagement with Generative AI is associated with higher levels of AI literacy. The finding is particularly relevant because contemporary AI-literacy frameworks emphasise not merely technical usage but the ability to understand, evaluate and apply AI responsibly (Ng et al., 2021; Lintner, 2024).

10. Positive Relationship with Ethical Decision-Making

Generative AI Tool Usage was positively correlated with Ethical Decision-Making ($r = 0.463$), while AI Literacy demonstrated the strongest correlation with Ethical Decision-Making ($r = 0.540$). This indicates that students' ability to understand and critically evaluate AI may be particularly relevant to ethical decision-making. Recent empirical research has similarly found a positive association between AI literacy and students' ability to make ethical judgments concerning Generative AI (Reed et al., 2026).

11. Significant Influence of Generative AI Usage

Regression analysis established a significant positive influence of Generative AI Tool Usage on Ethical Decision-Making ($B = 0.467$, $p < 0.001$), explaining 21.4% of its variance. Hence, H_{01} was rejected. This finding suggests that Generative AI engagement is significantly associated with students' ethical decision-making, although responsible use depends on the educational and ethical context surrounding that engagement.

12. Significant Mediating Role of AI Literacy

AI Literacy significantly mediated the relationship between Generative AI Tool Usage and Ethical Decision-Making, with an indirect effect of 0.209 ($p < 0.001$). Since the direct effect remained significant, the mediation was partial. Thus, AI Literacy represents an important mechanism through which Generative AI usage is associated with Ethical Decision-Making. This finding is consistent with recent research that positions AI literacy as an important foundation for ethical and responsible AI engagement (Kajiwara & Kawabata, 2024; Reed et al., 2026).

13. Significant Moderating Role of Ethical Awareness

Ethical Awareness significantly moderated the relationship between Generative AI Tool Usage and Ethical Decision-Making (interaction $B = 0.149$, $p < 0.001$). The moderation model explained 31.7% of the variance in Ethical Decision-Making, confirming that the ethical context surrounding AI use influences the relationship between AI engagement and ethical decision-making. This is consistent with broader AI-ethics literature emphasising fairness, privacy, accountability and responsible human oversight (Floridi & Cowls, 2019; Jobin et al., 2019).

14. Limited Influence of Demographic Characteristics

The study found no statistically significant differences in Ethical Decision-Making across gender, programme, AI-use frequency, AI experience or ethical AI training. This suggests that the principal explanatory variables in the proposed model—AI usage, AI literacy and ethical awareness—may be more relevant to understanding ethical decision-making than the selected

demographic characteristics. The finding also supports the need to examine competency- and ethics-based variables rather than relying exclusively on demographic segmentation.

5.2 Suggestions of the Study

1. Strengthen AI Literacy among Students: Universities and colleges should introduce structured AI-literacy programmes that develop students' ability to understand, apply, evaluate and critically question Generative AI outputs. AI literacy should incorporate both technological and socio-ethical competencies (Ng et al., 2021; *Artificial intelligence literacy for technology education*, 2024).

2. Provide Formal Ethical AI Training: The finding that 54.17% of respondents had not received ethical AI training indicates a need for formal institutional programmes addressing plagiarism, privacy, bias, misinformation, copyright and academic integrity. Evidence from Kajiwara and Kawabata (2024) demonstrates the potential value of curriculum-based instruction on ethical AI use.

3. Promote Critical Evaluation of AI Outputs: Students should be trained to verify AI-generated information against credible academic sources. Such training can help students recognise inaccurate, biased or misleading AI outputs and avoid uncritical dependence on generated responses.

4. Develop Clear Institutional AI Policies: Universities should establish clear guidelines distinguishing acceptable and unacceptable applications of Generative AI in assignments, examinations, research and other academic activities. Recent research on student chatbot use similarly emphasises the need for clear institutional policies and assessment redesign (*The rapid rise of generative AI*, 2024).

5. Encourage Responsible AI Use: Students should be encouraged to use Generative AI as a learning-support mechanism rather than as a substitute for independent thinking. Responsible-use principles should emphasise human judgement, verification and intellectual contribution.

6. Integrate AI Ethics into the Curriculum: AI ethics should be incorporated into existing academic curricula. Topics such as bias, privacy, fairness, accountability, academic integrity and responsible decision-making should accompany technical knowledge. Recent AI-literacy research specifically highlights socio-ethical understanding as a core component of AI literacy.

7. Redesign AI-Sensitive Assignments: Faculty members should develop assignments requiring reflection, personal interpretation, critical evaluation and source verification. This can reduce inappropriate dependence on AI while preserving its legitimate educational benefits.

8. Strengthen Faculty Development: Faculty development programmes should equip teachers with knowledge of Generative AI capabilities, limitations and ethical implications. This will enable educators to provide students with appropriate guidance as AI becomes increasingly integrated into learning.

9. Promote Academic Integrity: Institutions should clearly communicate expectations concerning originality, authorship, plagiarism and acknowledgement of AI assistance. This is particularly important because students may not always perceive AI-assisted assessment practices as violations of academic integrity.

10. Use Scenario-Based Ethical Learning: Students should be exposed to realistic AI-related ethical scenarios involving authorship, plagiarism, privacy, misinformation and appropriate

academic use. Recent evidence indicates that scenario-based approaches can provide useful insight into students' ethical judgment concerning Generative AI (Reed et al., 2026).

11. Establish Responsible AI Governance: Higher-education authorities should develop flexible governance frameworks balancing technological innovation with academic integrity, privacy, transparency and accountability. A systematic review of AI in higher education has similarly called for greater attention to ethics, collaboration and methodological rigour (Bond et al., 2024).

12. Adopt a Responsible AI Literacy Framework: Institutions should integrate AI literacy, ethical awareness, critical thinking and academic integrity into their AI adoption strategies. The present findings indicate that technological exposure alone is insufficient; responsible AI use requires students to possess both technological competence and ethical awareness.

CHAPTER 6: CONCLUSION AND FUTURE SCOPE FOR RESEARCH

6.1 Conclusion of the Study

The study concludes that Generative AI Tool Usage significantly influences students' Ethical Decision-Making. The positive regression relationship demonstrates that AI engagement is associated with students' ethical decision-making capabilities. However, the findings should not be interpreted as suggesting that AI usage automatically produces ethical behaviour. Rather, the results indicate that the educational and ethical competencies accompanying AI use are important. A particularly important finding is the partial mediating role of AI Literacy. The significant indirect effect demonstrates that students' understanding, evaluation and responsible application of AI contribute to the relationship between AI usage and Ethical Decision-Making. This finding is consistent with recent evidence showing a positive association between AI literacy and scenario-based ethical judgment among undergraduate students (Reed et al., 2026). The study also establishes that Ethical Awareness significantly moderates the relationship between Generative AI Tool Usage and Ethical Decision-Making. This finding reinforces the argument that responsible AI use requires awareness of ethical principles rather than technological familiarity alone. Kajiwarra and Kawabata (2024), for example, found that education incorporating AI ethical principles can improve students' understanding of ethical AI use.

The study therefore concludes that AI literacy and ethical awareness should develop alongside Generative AI adoption in higher education. Institutions should not approach Generative AI exclusively as a threat to academic integrity or solely as a technological opportunity. Instead, it should be integrated through a balanced approach that combines technological competence, critical thinking, ethical awareness and academic integrity. Ultimately, the responsible integration of Generative AI requires a shift from simply asking "Can students use AI?" to asking "Can students use AI critically, responsibly and ethically?" This approach is consistent with emerging research that frames AI literacy as encompassing both technological knowledge and socio-ethical understanding.

6.3 Future Scope for Research

- 1. Larger and More Diverse Samples:** Future studies can include larger samples covering multiple universities, states and regions. This would improve the generalisability of findings and allow comparisons across different educational contexts.
- 2. Cross-Disciplinary Comparisons:** Future research can compare students from Commerce, Management, Engineering, Science, Humanities, Education and other disciplines to determine whether disciplinary background influences AI literacy and ethical decision-making.
- 3. Longitudinal Research:** The present study is cross-sectional. Future longitudinal studies can examine how AI usage, AI literacy and ethical awareness develop as students gain greater exposure to rapidly evolving Generative AI technologies.
- 4. Comparison of Different Generative AI Tools:** Future studies can compare users of ChatGPT, Gemini, Copilot, Claude, Perplexity and other emerging platforms to determine whether differences in AI-tool characteristics influence ethical decision-making.
- 5. Inclusion of Additional Variables:** Future research can incorporate digital literacy, critical thinking, trust in AI, AI dependency, perceived usefulness, AI self-efficacy and moral reasoning to develop a more comprehensive model of responsible AI use.
- 6. Institutional Policy as a Variable:** Future studies can examine whether the clarity, awareness and enforcement of institutional Generative AI policies influence students' ethical decision-making and responsible AI behaviour. This is particularly relevant given recent calls for clearer institutional guidance concerning AI-assisted academic work.
- 7. Faculty Perspective:** Future research can extend the investigation to faculty members to examine their perceptions of Generative AI, academic integrity, ethical concerns and preparedness to guide students.
- 8. Cross-Cultural Research:** Comparative research across countries and cultural settings could examine whether cultural values, educational systems and regulatory environments influence AI literacy and ethical decision-making.
- 9. Experimental and Scenario-Based Research:** Future researchers can employ experimental designs and scenario-based ethical dilemmas rather than relying exclusively on self-reported questionnaire responses. The recent work of Reed et al. (2026) demonstrates the value of scenario-based assessment for examining students' actual ethical judgment concerning Generative AI.
- 10. Development of an Ethical AI Competency Framework:** Future research can develop and validate an Ethical AI Competency Framework for Higher Education incorporating AI literacy, ethical awareness, critical thinking, academic integrity and ethical decision-making. Such a framework could support curriculum development, institutional policy and student assessment.

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