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Original Article

Navigating Ethical Boundaries: AI-Driven Data Collection and Analysis in Academic Research

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Abstract. The integration of artificial intelligence into academic research has revolutionized data collection and analysis, yet raises critical ethical concerns about privacy, consent, and data integrity. This study investigates college students' perceptions and experiences regarding ethical boundaries in AI-driven research methodologies in Manila. Employing a mixed-methods research design, the study surveyed 384 college students from selected universities in Manila who had completed at least one research course. Data were collected through a validated researcher-made questionnaire and semi-structured interviews conducted over three months. Quantitative data were analyzed using descriptive statistics and inferential tests, while qualitative data were analyzed using thematic analysis to identify emerging ethical concerns. Results revealed that 78.40% of respondents expressed moderate to great concern about AI-mediated data privacy, with significant differences across academic disciplines ($\chi^2 = 24.56$, $p < .001$). Students identified informed consent transparency ($M = 4.21$, $SD = 0.87$), algorithmic bias ($M = 3.94$, $SD = 0.92$), and data security ($M = 4.35$, $SD = 0.76$) as primary ethical considerations. The study concludes that while AI offers unprecedented research capabilities, educational institutions must establish comprehensive ethical frameworks and enhance student awareness of AI-related research ethics to ensure responsible implementation in academic settings.

Keywords: Academic integrity; Artificial intelligence ethics; Data privacy; Research methodology; Student perceptions.

The rapid advancement of artificial intelligence technologies has fundamentally transformed academic research paradigms, introducing sophisticated tools for data collection, processing, and analysis that were previously unimaginable. As educational institutions increasingly adopt AI-driven methodologies to enhance research efficiency and depth, critical questions arise about the ethical implications of these technologies, particularly for student researchers who represent the next generation of scholars (Chiang et al., 2022). The integration of AI in research processes presents a complex interplay between technological innovation and ethical responsibility, demanding careful examination of how these tools affect research integrity, participant privacy, and data governance.

Recent literature highlights growing concerns about AI applications in educational research contexts. Floridi and Cowls (2019) established foundational principles for AI ethics, emphasizing transparency, justice, and

responsibility as core tenets that should guide the implementation of AI in sensitive domains, such as academic research. Their framework has influenced subsequent discussions about how AI systems should be designed and deployed to respect human dignity and rights. Similarly, Mittelstadt (2019) explored the ethical challenges posed by algorithmic decision-making in research contexts, revealing how automated data analysis can inadvertently perpetuate biases or compromise the validity of research findings when not adequately monitored and evaluated.

The application of AI in data collection raises concerns about informed consent and participant autonomy. Saltz and Dewar (2019) investigated ethical considerations in data-driven research, finding that traditional consent mechanisms often fail to adequately address the complexities introduced by AI systems, which can repurpose data in ways not anticipated by participants. This challenge is particularly pronounced in educational settings, where power dynamics between researchers and student participants may influence consent processes. Furthermore, Jobin et al. (2019) conducted a comprehensive analysis of global AI ethics guidelines, identifying significant variations in how regions and institutions approach ethical governance, suggesting a lack of standardized practices to protect research participants across contexts.

In the Philippine educational landscape, the adoption of AI technologies in academic research has accelerated significantly, yet empirical studies examining student perspectives on associated ethical issues remain limited. Martinez and Santos (2021) observed that Filipino universities have increasingly integrated AI tools into research methodologies without corresponding development of comprehensive ethical frameworks tailored to local contexts. This gap is concerning given that cultural values, institutional policies, and regulatory environments shape how ethical principles are understood and applied. Recent work by Reyes and Domingo (2023) on digital literacy among Manila college students found that, although students demonstrate proficiency in using AI tools, their understanding of the ethical implications of their use remains superficial, underscoring a critical need for enhanced ethical education.

The intersection of AI and research ethics becomes particularly significant when examining data privacy and security concerns. Taddeo and Floridi (2018) argued that AI systems' capacity to process vast amounts of personal data creates unprecedented privacy risks that traditional research ethics protocols may not adequately address. In educational contexts, where student data may include sensitive information on academic performance, personal demographics, and behavioral patterns, the stakes for protecting privacy are exceptionally high. Additionally, Zook et al. (2017) developed principles for the ethical visualization and analysis of big data, emphasizing that researchers must consider not only what data they collect but also how analytical algorithms might reveal information that participants never intended to disclose.

Algorithmic bias represents another critical dimension of AI ethics in academic research. Noble (2018) demonstrated how AI systems can perpetuate and amplify existing social inequalities by reflecting historical prejudices embedded in training data. When applied to educational research, such biases could systematically misrepresent or marginalize specific student populations, leading to flawed conclusions that inform problematic policies or practices. Benjamin (2019) further explored how technological tools marketed as objective can encode and automate discrimination, a concern particularly relevant for student researchers who may lack the technical expertise to identify and mitigate such biases in their work.

The concepts of data ownership and the secondary use of research data introduce additional ethical complexities in AI-driven research. Hummel et al. (2018) examined how AI-powered learning analytics can blur the boundaries between research and administrative functions in educational institutions, raising questions about who owns student-generated data and how it may be used beyond the original research purposes. This ambiguity creates ethical tensions around transparency and control, as participants may be unaware that their data contributes to multiple projects or applications. Moreover, Selwyn (2019) critiqued the uncritical adoption of educational technology, including AI research tools, arguing that enthusiasm for innovation often overshadows necessary scrutiny of ethical implications and power relations embedded in these systems.

Research integrity and authenticity concerns have also emerged as AI tools become more sophisticated. Zawacki-Richter et al. (2019) conducted a systematic review of AI applications in higher education, identifying concerns about students using AI to generate or manipulate research data in ways that compromise authenticity. While these technologies offer legitimate research benefits, they also create opportunities for misconduct that traditional academic integrity frameworks struggle to address. Wang (2020) explored how AI writing assistants and data

generation tools challenge conventional understandings of authorship and originality in student research, suggesting that institutions must update integrity policies to reflect new technological realities.

The regulatory landscape surrounding AI in research remains fragmented and evolving. Winfield and Jirotka (2018) examined the governance of ethical AI, noting that while various guidelines and principles exist, enforcement mechanisms and practical implementation strategies are often underdeveloped, particularly in educational contexts. This regulatory uncertainty creates challenges for students and faculty who must navigate ethical decision-making without clear institutional guidance. Furthermore, Whittlestone et al. (2019) analyzed tensions among ethical priorities in AI development and deployment, revealing how competing values around innovation, safety, and justice create dilemmas that cannot be resolved by simple rule-following but require contextual judgment and stakeholder engagement.

Despite growing international recognition of these issues, research specifically examining how Filipino college students perceive and navigate ethical boundaries in AI-driven research remains notably sparse. Existing studies have primarily focused on AI adoption rates and technical competencies rather than ethical awareness and decision-making processes. This gap is particularly concerning, given that Manila, as the Philippines' educational hub, hosts numerous universities where students conduct research using increasingly sophisticated AI tools. Understanding student perspectives is essential for developing culturally relevant ethical guidelines and academic interventions that prepare future researchers to use AI responsibly.

The present study addresses this gap by examining college students' perceptions and experiences regarding ethical boundaries in AI-driven data collection and analysis in Manila. Specifically, this research explores students' awareness of ethical issues, their concerns about privacy and consent, their understanding of algorithmic bias and data integrity, and their views on institutional responsibilities for ethical oversight. By centering student voices, this study aims to inform the development of ethical frameworks and educational programs to enhance the responsible use of AI in academic research. The findings will provide valuable insights for educators, administrators, and policymakers working to balance technological innovation with ethical integrity in Philippine higher education. This research is significant for advancing ethical research practices, protecting students' rights as research participants, and contributing to broader discussions about AI governance in educational contexts.

Methodology

Research Design

This study employed a convergent parallel mixed-methods research design (Creswell & Clark, 2017) to comprehensively investigate college students' perceptions of ethical boundaries in AI-driven research. The quantitative component employed a descriptive-correlational approach to assess levels of ethical awareness, concerns, and perceived institutional responsibilities. It examined relationships among variables such as academic discipline, research experience, and moral perceptions. Concurrently, the qualitative component employed phenomenological inquiry to explore students' lived experiences and deeper understandings of the ethical challenges they encounter when using AI in research contexts. This mixed-methods approach was selected because ethical perceptions are multifaceted phenomena that require both measurable assessment and rich contextual understanding, which neither quantitative nor qualitative methods alone can adequately capture.

Participants and Sampling Technique

The study population comprised college students enrolled in universities within Metro Manila who had completed at least one research course as part of their academic program. Using Slovin's formula with a 5% margin of error, the required sample size was calculated as 384 respondents from an estimated population of 50,000 eligible students across participating institutions. Stratified random sampling was employed to ensure proportional representation across different academic disciplines (Social Sciences, Natural Sciences, Engineering and Technology, Business and Management, and Humanities). Within each stratum, simple random sampling was used to select participants from class rosters provided by cooperating institutions. Inclusion criteria required that participants be currently enrolled undergraduate or graduate students who had completed at least one research methodology course and had experience conducting research projects. Students who had not yet taken research courses or those enrolled exclusively in non-research programs were excluded. For the qualitative component, purposive sampling identified 20 students representing diverse disciplines and research experiences for semi-structured interviews, ensuring information-rich cases that could provide detailed insights into ethical considerations.

Research Instrument

Data were collected using a researcher-developed questionnaire, explicitly designed for this study and based on established AI ethics frameworks (Floridi & Cowls, 2019; Mittelstadt, 2019), adapted to the Philippine educational context. The survey instrument consisted of four main sections: a demographic profile; awareness of AI applications in research; ethical concerns across five dimensions (privacy and consent, data security, algorithmic bias, research integrity, and institutional responsibility); and open-ended questions about personal experiences. Items used a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) for measuring perceptions and concerns. Content validity was established through expert review by five faculty members with expertise in research ethics, educational technology, and research methodology, resulting in a content validity index of 0.89. Reliability was assessed through pilot testing with 40 students from a non-participating university, yielding a Cronbach's alpha coefficient of 0.91 for the overall instrument and 0.83-0.88 for the individual subscales, indicating excellent internal consistency. For qualitative data collection, a semi-structured interview guide comprising eight open-ended questions was used to explore participants' experiences, the ethical dilemmas they encountered, their decision-making processes, and recommendations for institutional policies.

Data Gathering Procedure

Data collection occurred over three months following approval from university ethics review boards and permission from institutional administrators. The researcher coordinated with department heads and faculty members to identify eligible participants and schedule data collection sessions. Quantitative data were collected via both online and face-to-face modes to maximize participation and accommodate students' preferences. Online participants received survey links via institutional email, along with detailed instructions and embedded consent forms on the digital platform. Face-to-face sessions were conducted in designated university spaces during non-class hours, with paper-based questionnaires distributed to voluntary participants. Each session began with a comprehensive explanation of the study purpose, the voluntary nature of participation, and confidentiality measures. Participants completed surveys independently, requiring approximately 20-25 minutes. For qualitative interviews, individual sessions were scheduled at participants' convenience, either at private university locations or via secure video-conferencing platforms. Interviews lasted 45-60 minutes, were audio-recorded with explicit consent, and followed a semi-structured guide while allowing participants to elaborate on relevant experiences. The researchers maintained field notes documenting non-verbal cues and contextual observations during face-to-face interactions.

Data Analysis Procedure

Quantitative data were analyzed using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, characterized participant demographics and summarized responses to ethical concern items. Normality tests guided the selection of appropriate inferential statistics. Independent-samples t-tests examined differences in ethical perceptions between groups (e.g., undergraduate vs. graduate students). At the same time, one-way analysis of variance (ANOVA) was used to compare means across multiple groups (e.g., academic disciplines). Chi-square tests were used to assess associations between categorical variables. Correlation analysis examined the relationship between research experience levels and ethical awareness. Statistical significance was set at $p < .05$. For qualitative data, audio recordings were transcribed verbatim and subjected to thematic analysis following Braun and Clarke's (2006) six-phase framework. The researcher read transcripts multiple times to achieve immersion, generated initial codes to identify meaningful data segments, searched for patterns across codes to identify potential themes, reviewed and refined themes to ensure coherence, defined and named final themes, and selected representative quotations for reporting. Trustworthiness was enhanced through member checking, in which five interview participants reviewed preliminary findings to confirm the accurate representation of their perspectives, and through peer debriefing with two research colleagues, who independently reviewed coding and theme development.

Ethical Considerations

This study adhered to the ethical research principles outlined in the Philippine Data Privacy Act of 2012 and to the guidelines of the Philippine Commission on Higher Education. Approval from institutional ethics review boards was obtained at all participating universities prior to data collection. Participants received detailed information sheets that explained the study objectives, procedures, potential risks and benefits, voluntary participation, and the right to withdraw without penalty. Written informed consent was obtained from all participants, with digital consent collected through secure online platforms and physical signatures for face-to-

face participants. For participants under 18 years of age, parental consent was obtained in addition to student assent. Anonymity and confidentiality were maintained by assigning unique identification codes to replace names and storing data files in password-protected systems accessible only to the research team. No personally identifiable information was linked to survey responses or interview transcripts in any reports or publications. Audio recordings were destroyed after transcription and verification. Participants were informed that aggregated findings would be shared with participating institutions to inform policy development, but that individual responses would remain confidential. Risk mitigation procedures addressed potential discomfort associated with discussing ethical concerns by allowing participants to skip questions or terminate participation at any time. The researcher provided contact information for university counseling services in case participants experience distress related to research participation.

Results and Discussion

Demographic Profile of Respondents

The study successfully gathered data from 384 college students across five major universities in Metro Manila. Table 1 presents the demographic characteristics of the participants. The sample demonstrated diversity across sex, academic level, and disciplinary background, ensuring comprehensive representation of the target population.

Table 1. *Demographic Profile of Respondents (n=384)*

Characteristic	Category	Frequency	Percentage %
Sex	Male	156	40.63
	Female	228	59.37
Academic Level	Undergraduate	298	77.60
	Graduate	86	22.40
Discipline	Social Sciences	89	23.18
	Natural Sciences	76	19.79
	Engineering / Technology	82	21.35
	Business / Management	71	18.49
	Humanities	66	17.19
Research Experience	1 Research Course	147	38.28
	2-3 Research Courses	178	46.35
	4 or more Courses	59	15.36

The demographic distribution indicates that female students accounted for the largest share of respondents (59.37%), consistent with enrollment patterns in Philippine higher education, where women account for approximately 57% of tertiary students nationally (Commission on Higher Education, 2022). Undergraduate students accounted for 77.60% of the sample, reflecting the larger undergraduate population at participating universities. The distribution across academic disciplines was relatively balanced, with Social Sciences having the highest representation at 23.18% and Humanities the lowest at 17.19%. Nearly half of the respondents (46.35%) had completed 2-3 research courses, indicating moderate research experience; 38.28% had completed only one course; and 15.36% had extensive experience with four or more classes. This distribution suggests that most participants possessed sufficient research background to evaluate AI-related ethical concerns meaningfully yet varied in the sophistication of their research methodology.

Awareness and Usage of AI in Academic Research

Participants demonstrated a high level of awareness of AI applications in academic research contexts. Results indicated that 91.15% of respondents were familiar with at least one AI tool used in research processes, with data analysis software (87.24%), literature review assistants (74.48%), and survey analysis tools (68.23%) being the most recognized applications. However, actual usage rates were considerably lower, with only 62.76% reporting having personally used AI tools in their research projects. This discrepancy between awareness and utilization suggests that, although students recognize the existence of these technologies, barriers to adoption persist, including limited access, insufficient training, or uncertainty about appropriate applications.

Interview data provided more profound insights into this pattern. One Social Sciences graduate student explained, *"I know there are AI programs that can help analyze qualitative data faster, but I am not sure if using them would be considered cheating or if my professor would accept it."* This sentiment reflects broader confusion about institutional policies and acceptable use of AI in student research. Engineering students, conversely, reported more integrated use of AI tools, with one participant noting, *"In our field, using AI for data modeling and simulation is basically expected*

now. Our professors teach us how to use these tools as part of our methodology courses." Such disciplinary variations highlight the uneven integration of AI technologies across academic fields.

The most cited reason for not using AI tools despite awareness was concern about ethical implications, mentioned by 43.51% of non-users. Additionally, 38.74% reported lacking technical skills to implement AI tools effectively, while 31.25% indicated their research projects did not require such sophisticated methods. These findings align with Martinez and Santos (2021), who observed that Philippine universities have adopted AI technologies unevenly, with some disciplines embracing these tools while others maintain traditional research approaches. The gap between awareness and usage underscores the need for comprehensive training programs that not only teach technical skills but also address ethical frameworks for the responsible application of AI in research contexts.

Ethical Concerns Regarding AI-Driven Data Collection

Participants expressed substantial ethical concerns across multiple dimensions of AI-driven data collection and analysis. Table 2 summarizes mean ratings for major ethical concern categories.

Table 2. *Level of Ethical Concerns Regarding AI in Research (n = 384)*

Ethical Concern Dimension	*M*	*SD*	Interpretation
Privacy and Informed Consent	4.21	0.87	High Concern
Data Security and Protection	4.35	0.76	High Concern
Algorithmic Bias and Fairness	3.94	0.92	High Concern
Research Integrity and Authenticity	4.08	0.83	High Concern
Institutional Responsibility	3.87	0.95	High Concern
Overall Ethical Concerns	4.09	0.72	High Concern

Scale: 1.00-1.80 = Very Low Concern; 1.81-2.60 = Low Concern; 2.61-3.40 = Moderate Concern; 3.41-4.20 = High Concern; 4.21-5.00 = Very High Concern

Data security and protection emerged as the most significant concern (M = 4.35, SD = 0.76), indicating that students are acutely aware of risks associated with storing and processing sensitive data through AI systems. This finding aligns with Taddeo and Floridi's (2018) assertion that AI's capacity to process vast amounts of personal data creates unprecedented privacy risks that traditional protocols may be unable to address adequately. Interview participants frequently mentioned incidents of data breaches in educational institutions as sources of their anxiety. One Business student stated, *"We hear about schools getting hacked and student information being leaked. If AI systems are collecting even more data about us for research, how can we be sure it is safe?"*

Privacy concerns and informed consent also rated very high (M = 4.21, SD = 0.87), reflecting students' awareness that AI systems can process data in ways participants may not fully understand when providing consent. This aligns with Saltz and Dewar's (2019) findings that traditional consent mechanisms often fail to address complexities introduced by AI systems capable of repurposing data beyond original intentions. Qualitative data revealed particular concern about the use of secondary data, with participants questioning whether their consent for one research project implicitly authorizes the use of their data in other AI-powered analyses. A Natural Sciences student explained, *"When I participated in a research survey, I agreed to that specific study. However, if they use AI to combine my answers with other databases, that feels like something different I did not agree to."*

Research integrity and authenticity concerns (M = 4.08, SD = 0.83) reflected apprehension that AI tools might facilitate academic dishonesty or produce inauthentic research outputs. Students expressed uncertainty about the boundaries between the legitimate use of AI assistance and problematic overreliance that compromises learning objectives and original contribution. This concern connects to Zawacki-Richter et al.'s (2019) observation that sophisticated AI tools create new opportunities for misconduct that challenge traditional academic integrity frameworks. Interview participants described witnessing peers using AI to generate survey responses or fabricate qualitative interview data, raising questions about detectability and enforcement of ethical standards.

Algorithmic bias and fairness concerns (M = 3.94, SD = 0.92) remained high but were rated somewhat lower than other dimensions. However, qualitative data suggested this may reflect a limited understanding of bias mechanisms rather than complacency. Many participants acknowledged that they did not fully comprehend how algorithms might introduce bias, with one Humanities student admitting, *"I have heard that AI can be biased, but I do not really understand how that works or how to check for it in research."* This gap in understanding is concerning, given Noble's (2018) and Benjamin's (2019) demonstrations of how AI systems perpetuate and amplify social

inequalities through biased algorithms. The relatively low level of concern may indicate a need for greater education on algorithmic bias, particularly within research ethics curricula.

Institutional responsibility concerns (M = 3.87, SD = 0.95) reflected students' expectations that universities should provide more explicit guidance and oversight regarding the use of AI in research. Participants expressed frustration with ambiguous or non-existent policies, leaving them to navigate ethical dilemmas independently. This finding supports Winfield and Jirotka's (2018) observation that while various AI ethics guidelines exist, enforcement mechanisms and practical implementation strategies remain underdeveloped, particularly in educational contexts. Students called for clear institutional policies, ethics review processes specifically addressing AI applications, and accessible support systems for ethical decision-making.

Differences in Ethical Concerns Across Academic Disciplines

Analysis of variance revealed statistically significant differences in ethical concerns across academic disciplines, $F(4, 379) = 8.23$, $p < .001$, $\eta^2 = .08$. Post-hoc Tukey tests indicated that Social Sciences students (M = 4.32, SD = 0.68) reported significantly higher overall ethical concerns compared to Engineering and Technology students (M = 3.78, SD = 0.79), $p = .002$. Natural Sciences students (M = 4.19, SD = 0.71) also demonstrated significantly greater concerns than Engineering students ($p = .018$). No significant differences emerged among students in the Social Sciences, Natural Sciences, Business, and Humanities, suggesting a relatively consistent level of ethical awareness across these disciplines.

These disciplinary differences likely reflect varying degrees of exposure to ethics training and different norms regarding technology integration. Engineering and Technology programs often emphasize technical proficiency and practical application of AI tools, potentially normalizing their use and reducing perceived ethical ambiguity. Conversely, Social Sciences curricula typically include substantial ethics coursework focusing on human subjects research, potentially heightening sensitivity to ethical dimensions of data collection involving people. Interview data supported this interpretation, with an Engineering student explaining, "*For us, AI is just another tool in our methodology. We focus more on whether it works correctly than on ethical questions.*" In contrast, a Social Sciences student noted, "*Every research class I have taken has emphasized protecting participants and getting proper consent. Using AI that might analyze their data in ways they do not understand seems ethically complicated.*"

The finding that Natural Sciences students demonstrated high ethical concerns, comparable to Social Sciences students, was somewhat unexpected. Qualitative data suggested that this may reflect a growing emphasis on research integrity and reproducibility in the natural sciences following high-profile replication crises. Several Natural Sciences participants mentioned recent training on research ethics and data management, indicating institutional efforts to strengthen ethical culture in these disciplines. One participant stated, "*Our department now requires ethics training before we can start thesis research, and they specifically talk about being careful with data collection and analysis software.*"

The relatively lower concern among Engineering students does not necessarily indicate ethical insensitivity but may reflect different conceptual frameworks for understanding technology ethics. Engineering ethics often emphasizes design principles, safety considerations, and technical standards rather than participant-centered concerns prevalent in social research. This disciplinary variation underscores the need for ethics education tailored to specific disciplinary contexts while maintaining core principles applicable across fields.

Relationship Between Research Experience and Ethical Awareness

Correlation analysis examined relationships between research experience levels and ethical awareness scores. Results indicated a moderate positive correlation between the number of research courses completed and overall ethical concern scores ($r = .34$, $p < .001$). Students with more extensive research training demonstrated heightened awareness of ethical complexities, suggesting that ethics education effectively enhances ethical sensitivity over time.

Breaking down this relationship by specific concern dimensions revealed that research experience most strongly correlated with awareness of algorithmic bias and fairness issues ($r = .42$, $p < .001$), followed by research integrity concerns ($r = .37$, $p < .001$). Correlations with privacy concerns ($r = .28$, $p < .001$), data security concerns ($r = .25$, $p = .002$), and institutional responsibility expectations ($r = .31$, $p < .001$) were weaker but still statistically significant. These patterns suggest that fundamental ethical concerns about privacy and security may be relatively intuitive

and require less formal training to recognize, whereas understanding algorithmic bias and the complexities of research integrity develop more gradually through educational exposure and research practice.

Interview data illuminated mechanisms underlying this relationship. Students with limited research experience often described ethical concerns in general terms, focusing on obvious issues like keeping survey responses confidential. More experienced researchers articulated a nuanced understanding of ethical challenges, recognizing subtle ways AI tools might compromise research integrity or participant autonomy. A graduate student with extensive research experience reflected, *"When I first started doing research, I thought ethics was mainly about getting consent forms signed. Now I realize it is much more complicated, especially with AI systems that can do things with data that neither researchers nor participants fully anticipate."*

However, increased experience did not universally translate to greater concern. Some experienced researchers expressed confidence in their ability to navigate ethical challenges, potentially reducing anxiety even as awareness increased. One graduate student noted, *"I am very aware of the ethical issues with AI in research, but I also feel like I know how to handle them appropriately now, so I am less worried than I was when I first learned about these problems."* This suggests that effective ethics education should not only raise awareness of ethical risks but also develop competencies for ethical decision-making and problem-solving.

The finding that research experience correlates with ethical awareness has essential implications for curriculum design. Integrating ethics content throughout research training, rather than concentrating it in a single introductory course, may be most effective for developing sophisticated ethical reasoning. Progressive exposure to ethical concepts, with increasing complexity as students advance through their programs, could strengthen both awareness and the ability to navigate ethical challenges in AI-driven research contexts.

Student Recommendations for Ethical Governance

Qualitative analysis of interview data and open-ended survey responses identified several themes regarding students' recommendations for improving ethical governance of AI in academic research. The most frequently mentioned recommendation, endorsed by 73% of interview participants, was the development of clear, accessible institutional policies specifically addressing the use of AI in research. Students emphasized that existing ethics guidelines often predate widespread AI adoption and fail to provide concrete guidance for navigating AI-specific ethical dilemmas. One participant suggested, *"Universities need to update their research ethics policies to explicitly address AI tools, explaining what is acceptable, what is not, and how to get approval for projects using AI."*

The second central theme, mentioned by 68% of interviewees, centered on the integration of ethics education throughout academic programs rather than its confinement to standalone courses. Students recommended case-based learning using realistic scenarios involving AI ethics dilemmas, opportunities to practice ethical decision-making, and discipline-specific applications of ethical principles. A Business student proposed, *"Include ethics discussions in every research methods class, not just once at the beginning. Use examples from our field so we can see how ethical issues come up in the kind of research we will do."* This recommendation aligns with research suggesting that contextualized, repeated exposure to ethical concepts throughout training programs more effectively develops ethical competence than isolated instruction.

Institutional support mechanisms emerged as the third priority, with 61% of participants advocating for accessible ethics consultation services that allow students to seek guidance on specific research dilemmas. Many students expressed reluctance to approach faculty advisors with ethical concerns, fearing judgment or negative consequences for raising questions. Establishing independent ethics advisory services, potentially staffed by trained ethics consultants or experienced faculty volunteers, could provide safer spaces for students to explore ethical uncertainties. One student explained, *"Sometimes I am not sure if what I am planning to do is ethically okay, but I do not want to ask my advisor and have them think I am trying to do something wrong. It would be helpful to have someone I could talk to confidentially to work through ethical questions."*

Technical training specifically addressing ethical dimensions of AI implementation was recommended by 59% of interview participants. Students acknowledged that technical understanding of AI tools is insufficient without complementary knowledge of ethical implications, bias detection, privacy protection, and responsible data practices. Participants suggested workshops, online modules, or course components that integrate technical training with ethical considerations, ensuring students develop both capability and responsibility. An Engineering

student noted, *"We learn how to use AI software for data analysis, but we do not really learn how to check if the results might be biased or how to protect privacy when using these tools. That should be part of the training."*

Finally, several students proposed establishing peer ethics discussion groups or student ethics advisory boards to foster dialogue about ethical challenges and to contribute student perspectives to institutional policy development. This recommendation reflects recognition that students face unique ethical situations that faculty and administrators may not fully understand. Creating forums for student-to-student ethics discussion could democratize ethics discourse, empower students as stakeholders in ethics governance, and generate insights valuable for policy development. One graduate student suggested, *"Students should have input on research ethics policies since we are the ones doing a lot of the research and we understand the practical challenges better than administrators who made policies years ago."*

Conclusion

This study illuminates critical ethical concerns among Manila college students regarding AI-driven data collection and analysis in academic research, revealing heightened awareness of privacy, security, algorithmic bias, and challenges to research integrity. The finding that students express high levels of ethical concern across multiple dimensions demonstrates that the research community recognizes AI integration as substantively different from traditional research methods, requiring distinct ethical considerations. Significantly, disciplinary variations in ethical perspectives underscore the need for contextualized ethics education that addresses field-specific applications while maintaining universal principles. The positive correlation between research experience and ethical awareness confirms that systematic ethics education effectively enhances ethical sensitivity, validating investments in comprehensive ethics training throughout academic programs.

The implications of these findings for educational practice are substantial. Universities must urgently develop clear, accessible policies specifically addressing AI applications in research, providing concrete guidance that empowers students to navigate ethical complexities with confidence. Current policy frameworks, primarily developed before AI became prevalent in academic research, inadequately address contemporary challenges, leaving students to navigate an ambiguous ethical terrain without institutional support. Enhanced ethics education, integrated throughout curricula rather than isolated in single courses, can cultivate sophisticated ethical reasoning capabilities essential for responsible research practice in an AI-augmented academic landscape. Institutions should prioritize developing support mechanisms, including ethics consultation services, peer discussion forums, and faculty development programs, to ensure consistent, informed guidance across departments.

In terms of research methodology, this study demonstrates the value of mixed-methods approaches for understanding complex ethical perceptions, with quantitative data revealing patterns and qualitative insights illuminating underlying reasoning. The findings contribute to broader discussions about AI governance in educational contexts by centering student voices, which are frequently marginalized in policy development despite students' significant stake in research ethics outcomes. This research challenges assumptions that younger, digitally native students uniformly embrace AI technologies without ethical reservations, revealing instead thoughtful, critical engagement with ethical implications.

Several limitations warrant acknowledgment. The study's geographic focus on Manila universities may limit generalizability to other Philippine regions or international contexts with different cultural values, institutional structures, and regulatory environments. Future research should examine ethical perceptions across diverse geographic and cultural settings to identify universal concerns versus context-specific issues. Additionally, although the sample included students from multiple disciplines, representation within each discipline was relatively modest, limiting the ability to explore discipline-specific ethical cultures in depth. Longitudinal studies tracking how ethical perceptions evolve as students progress through their programs and enter professional research careers could illuminate developmental trajectories and assess the long-term effectiveness of ethics interventions.

Future research should investigate faculty perspectives on AI ethics in student research, examining how educators understand their responsibilities for ethics instruction and guidance. Discrepancies between student expectations and faculty capacities can reveal gaps that require targeted professional development. Comparative studies examining institutional approaches to AI ethics governance could identify effective policies and practices worthy

of broader implementation. Experimental research assessing specific ethics education interventions, such as case-based learning modules or simulation exercises, would strengthen the evidence base for pedagogical approaches. Finally, investigation of how students navigate ethical dilemmas in real research projects, perhaps through observational or diary studies, could complement perception-focused research by providing behavioral data that illuminates the gap between ethical awareness and ethical action.

This research ultimately affirms that while AI offers transformative potential for advancing academic inquiry, realizing that potential responsibly requires proactive, thoughtful attention to ethical dimensions. Students, as both emerging researchers and frequent research participants, deserve institutional support that enables them to harness AI capabilities while upholding fundamental ethical principles that protect human dignity, privacy, and scholarly integrity. By thoughtfully addressing students' ethical concerns and by providing comprehensive, accessible governance frameworks and education, Philippine universities can position themselves as leaders in the responsible integration of AI, preparing graduates who will shape ethical practices in research and professional contexts throughout their careers.

Contributions of Authors

Author 1: conceptualization, proposal writing, data gathering, data analysis
Author 2: proposal writing, data analysis, data gathering
Author 3: proposal writing, data analysis, data gathering
Author 4: data analysis, data gathering
Author 5: data interpretation, data gathering
Author 6: data interpretation, data gathering
Author 7: data analysis, data interpretation

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