ETHICS, PERSONALIZATION, AND TRUST IN AI-DRIVEN DIGITAL ADVERTISING: STUDENT PERCEPTIONS AND STRATEGIC RECOMMENDATIONS FOR HIGHER EDUCATION INSTITUTIONS

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Abstract

Artificial intelligence (AI) has emerged as a transformative force in higher education marketing, offering unprecedented opportunities for personalization and targeted communication. Yet, its adoption raises ethical questions regarding transparency, privacy, and trust. This study investigates student perceptions of ethics and personalization in AI-driven advertising using survey data from 400 students across diverse demographics, disciplines, and institutions in India. Employing descriptive, chi-square, correlation, and regression analyses, the study reveals three key insights. First, exposure to AI-driven campaigns is significant but uneven, with emails, chatbots, and Google apps dominating over mobile ads and social media. Second, ethical perceptions are strongly influenced by perceived effectiveness and outcomes ($\beta = 0.664$, $p < 0.001$), while engagement does not significantly predict ethical acceptance. Third, ethical trust and effectiveness are closely intertwined, confirming an outcome-dependent model of digital ethics. The findings highlight the need for higher education institutions to adopt transparent, personalized, and outcome-oriented strategies that foster trust and inclusivity. The study contributes to theory by extending engagement and ethics frameworks to AI-enabled marketing, and to practice by offering actionable recommendations for responsible institutional adoption of AI in higher education.

Keywords: Artificial Intelligence, Higher Education Marketing, Ethical Perceptions, Personalization, Student Trust, Digital Advertising, Transparency, Chatbots

Introduction

The adoption of artificial intelligence (AI) in higher education has extended beyond teaching and learning into the realm of institutional marketing and student recruitment. AI-driven digital advertising employs data analytics, predictive targeting, and personalization algorithms to reach students with tailored messages delivered through channels such as chatbots, emails, and search platforms (Davenport et al., 2020; Huang & Rust, 2021). For higher education institutions (HEIs) competing in increasingly saturated markets, such strategies promise efficiency, precision, and enhanced student engagement. Yet, alongside these opportunities emerge critical ethical challenges. The reliance on personal data raises concerns about privacy, transparency, and fairness (Floridi et al., 2018; Jobin et al., 2019). Students may welcome personalization when it adds value to their academic and

career choices, but they may also perceive AI-enabled campaigns as intrusive if they lack clarity about how data is collected and used. In this context, trust becomes central: the degree to which students perceive AI-driven advertising as both effective and ethical directly affects their willingness to accept and respond to such campaigns. Personalization further complicates this equation. While interactive tools such as chatbots and recommendation systems can foster engagement by delivering relevant content, they also risk crossing ethical boundaries if personalization is perceived as manipulative or discriminatory. Previous studies in consumer marketing suggest that ethical acceptance of AI technologies often depends less on abstract moral values and more on perceived usefulness and tangible outcomes (Kapoor et al., 2022; Wang et al., 2022). Whether these dynamics apply in the educational context, however, remains underexplored. The present study addresses this gap by investigating how students perceive the ethical and personalized dimensions of AI-driven advertising in higher education. Specifically, it examines (a) whether ethical acceptance is shaped by engagement or by perceived outcomes, and (b) how platform choice influences recognition and trust. Based on these insights, the paper proposes strategic recommendations for HEIs to deploy AI responsibly, ensuring both effectiveness and ethical integrity.

Literature Review

A. Ethical Dimensions of AI in Higher Education

The integration of artificial intelligence into higher education raises significant ethical considerations. Scholars have emphasized issues of privacy, transparency, accountability, and fairness in AI deployment (Floridi et al., 2018; Jobin et al., 2019). Ethical debates in educational contexts often focus on whether data collection for personalization infringes on students' autonomy or compromises equity by privileging digitally literate groups. In the absence of well-defined regulatory frameworks, institutions risk undermining student trust if AI applications are perceived as opaque or manipulative (Holmes et al., 2022). The AI4People framework further underscores the importance of designing AI systems that are lawful, ethical, and robust to ensure public trust (Floridi et al., 2018). In India, the emergence of the Digital Personal Data Protection Act (2023) has added urgency to institutional discussions about responsible AI use in education.

B. Personalization in Digital Advertising

Personalization, enabled by AI algorithms, is a hallmark of contemporary digital advertising. In higher education, personalization manifests through chatbots for admissions queries, predictive targeting for enrollment campaigns, and recommendation systems for course selection (Popenici & Kerr, 2017; Zawacki-Richter et al., 2019). Research in marketing demonstrates that personalization enhances relevance, increases attention, and fosters stronger connections with audiences (Lemon & Verhoef, 2016; Wedel & Kannan, 2016). However, personalization also raises ethical tensions, particularly when students perceive it as intrusive or when targeting is based on sensitive data. Prior studies suggest that the effectiveness of personalization depends on the balance between value-added customization and perceived overreach (Kapoor et al., 2022; Wang et al., 2022).

C. Trust and Ethical Perceptions in Digital Contexts

Trust is increasingly recognized as a determinant of digital adoption. In consumer marketing, ethical trust is shaped less by abstract principles and more by tangible outcomes such as usefulness and effectiveness (Haenlein & Kaplan, 2019; Wang et al., 2022). This phenomenon, often termed outcome-dependent ethics, implies that individuals judge the ethical acceptability of digital tools based on the benefits they derive. Applied to education, students may evaluate AI-driven advertising as ethical if it delivers relevant, transparent, and outcome-oriented content, regardless of broader concerns about data surveillance. At the same time, ethical lapses such as lack of consent or opaque algorithms can erode institutional credibility, even when campaigns appear effective (Christians et al., 2020).

D. Platform Choice and Ethical Transparency

The medium of delivery also shapes perceptions of AI-enabled advertising. Platforms such as emails,

chatbots, and search applications are often seen as more transparent and interactive, while mobile ads and social media are associated with generic targeting and lower credibility (Kietzmann et al., 2018; Langan et al., 2023). In educational contexts, this suggests that platform choice is not only a technical decision but also an ethical one, as students' trust in campaigns may vary with the perceived transparency of the channel.

E. Research Gap and Contribution

While existing research provides extensive insights into AI ethics and personalization in consumer contexts, relatively few empirical studies have examined these dynamics in higher education marketing. Specifically, there is limited evidence on how students perceive the ethical and personalized dimensions of AI-driven advertising and how these perceptions influence trust and acceptance. Moreover, the interplay between perceived effectiveness and ethical trust—a phenomenon widely documented in consumer research—remains underexplored in educational settings. This study addresses these gaps by analyzing a large and diverse student sample, offering empirical evidence on outcome-dependent ethics in higher education, and proposing actionable recommendations for institutions seeking to integrate AI responsibly into their marketing strategies.

Methodology

A. Research Design

This study adopted a quantitative, cross-sectional survey design to investigate student perceptions of the ethical and personalized dimensions of AI-driven advertising in higher education. A structured questionnaire was employed to gather data on students' exposure, ethical evaluations, personalization experiences, and trust in AI-enabled campaigns. The design was chosen to capture measurable patterns of perception across a large and diverse student population, allowing for robust statistical testing.

B. Population and Sample

The population comprised students enrolled in higher education institutions (HEIs) in India. Using a stratified random sampling method, a total of 400 students were surveyed to ensure representation across key demographic and institutional variables:

- **Age groups :** Under 18, 18–21, 22–25, 26 and above
- **Gender :** Male and Female
- **Course level:** Undergraduate and Postgraduate
- **Academic streams :** Science, Commerce, Arts, Engineering, Others
- **Institution types:** Government, Private, Deemed/Autonomous
- **Location:** Urban, Semi-urban, Rural

This stratification ensured inclusivity and allowed for examining whether perceptions varied across social, academic, and institutional contexts.

C. Data Collection Instrument

The questionnaire was divided into three sections:

1. **Demographic profile –** capturing age, gender, academic stream, course level, institution type, and location.
2. **Exposure and platform use –** measuring whether students had encountered AI-driven advertisements and identifying the channels (emails, chatbots, Google apps, mobile ads, social media).
3. **Perception and ethics scale –** items measuring perceptions of personalization, transparency, and ethical considerations, adapted from existing frameworks in AI ethics and marketing research (Floridi et al., 2018; Kapoor et al., 2022). A 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) was used to capture agreement levels.

Reliability analysis confirmed internal consistency, with Cronbach's alpha values exceeding 0.80 for the key constructs (Perception & Ethics, Effectiveness & Outcomes).

D. Data Collection Procedure

Surveys were administered both online and offline to maximize accessibility. Participation was voluntary, and informed consent was obtained prior to data collection. Ethical clearance was secured in line with institutional research policies, ensuring confidentiality and anonymity of responses.

E. Data Analysis

Data were analyzed using IBM SPSS Statistics (Version 26). The following statistical techniques were applied:

- Descriptive statistics (frequencies, percentages, means, standard deviations) to profile exposure levels and perceptions.
- Chi-square test to examine associations between exposure and platforms of delivery.
- Correlation analysis to explore relationships between ethical perceptions, personalization, and perceived effectiveness.
- Regression analysis to identify predictors of ethical acceptance, with Effectiveness & Outcomes and Student Engagement tested as explanatory variables.

This multi-method analytical approach enabled the study to assess not only the visibility of AI-driven advertisements but also the deeper perceptual and ethical dynamics shaping student trust and acceptance.

Results and Discussion

The results of this study provide a comprehensive overview of how students perceive and engage with AI-driven digital advertising in higher education. Through descriptive, inferential, and multivariate analyses, the findings reveal both the opportunities and challenges associated with AI-enabled personalization and ethics. While exposure levels and platform preferences highlight the growing presence of AI in educational marketing, regression and correlation analyses point to deeper dynamics in which ethical trust is shaped more by perceptions of effectiveness than by direct engagement. The following subsections present detailed results on exposure patterns, platform dependence, and the interrelationships between ethics, personalization, and effectiveness.

Exposure to AI-driven Educational Advertisements

Exposure to AI-driven or personalized advertisements is central to this study, as it directly addresses the core research objective of examining how students engage with AI-enabled marketing strategies in higher education. Identifying the extent to which students have encountered such advertisements provides a baseline understanding of their visibility, penetration, and potential influence across the student population.

Table 1: Respondents' Exposure to AI-driven or Personalized Education-related Advertisements (N = 400)

Have you seen AI-driven or personalized education-related ads?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Sure	38	9.5	9.5	9.5
	No	166	41.5	41.5	51.0
	Yes	196	49.0	49.0	100.0
	Total	400	100.0	100.0	

As shown in Table 1, nearly half of respondents (49%) reported exposure to AI-driven or personalized educational advertisements, while 41.5% had not and 9.5% were uncertain. This indicates that AI-enabled campaigns have achieved significant visibility but remain uneven in reach. The "Not Sure" responses suggest that students may not always recognize AI features in digital campaigns, highlighting the need for greater transparency. And then Figure 1 reinforces these findings, showing that emails, chatbots, and personalized systems are increasingly shaping higher education marketing. However, the sizable proportion of students reporting no exposure underscores inconsistencies in adoption across institutions and contexts. Overall, the results reflect both the growing influence of AI-driven advertising and the need to expand its inclusivity and clarity.

Platforms of Exposure

The platform of exposure is a crucial aspect of AI-driven educational advertising, as the effectiveness of digital campaigns often depends on the medium through which they are delivered. Different platforms—such as mobile ads, social media, chatbots, emails, and applications—vary in their ability to capture student attention and create meaningful engagement. Examining the platforms most commonly encountered by students offers insights into the communication channels that higher education institutions should prioritize in their AI-enabled marketing strategies.

As shown in Table 2, emails (25.8%), chatbots (24.5%), and Google apps (24.3%) were the dominant platforms, together accounting for nearly three-fourths of reported exposure. In contrast, social media (13.0%) and mobile ads (12.5%) played a smaller role. This distribution suggests that institutions prefer personalized, data-rich channels such as emails and chatbots, which enable targeted communication and interactive engagement. The prominence of Google apps highlights the role of AI algorithms in tailoring content, while the limited contribution of social media and mobile ads indicates a strategic shift toward controlled, institution-linked platforms. These findings align with prior research emphasizing personalization and relevance as critical drivers of student responsiveness in educational marketing (Kapoor et al., 2022; Choudhury & Pattnaik, 2020).

Table 2: Platforms of Exposure to AI-driven or Personalized Education-related Advertisements (N = 400)

On which platforms					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mobile ads	50	12.5	12.5	12.5
	Social media	52	13.0	13.0	25.5
	Google App	97	24.3	24.3	49.8
	Chatbots	98	24.5	24.5	74.3
	Emails	103	25.8	25.8	100.0
	Total	400	100.0	100.0	

Fig. 1: Respondents' Exposure to AI-driven or Personalized Education-related Advertisements

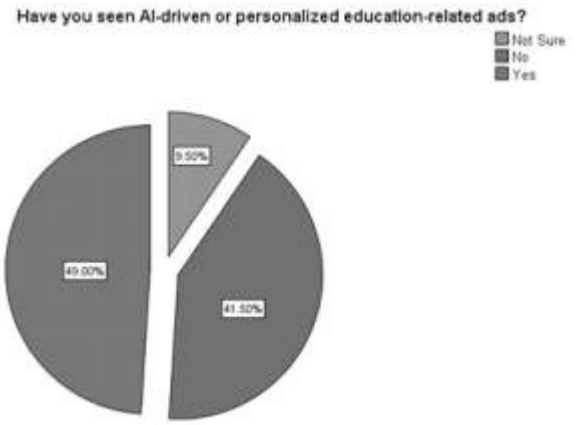

Fig. 2: Platforms of Exposure to AI-driven or Personalized Education-related Advertisements

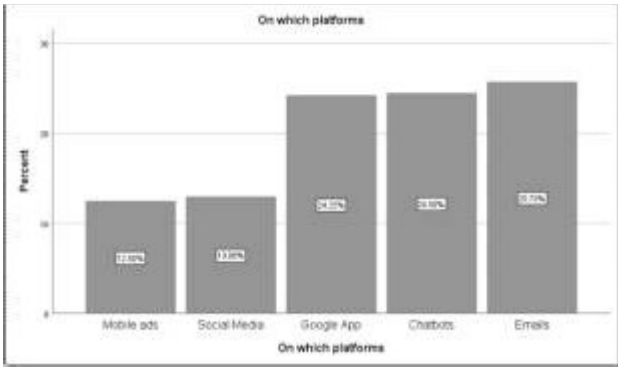

Figure 2 shows that emails (25.8%), chatbots (24.5%), and Google apps (24.3%) were the most common platforms, while social media (13.0%) and mobile ads (12.5%) accounted for smaller shares. The figure reinforces the tabular findings, highlighting the dominance of personalized and interactive channels that allow institutions to deliver targeted, measurable, and relevant communication. The strong presence of Google apps further reflects the role of algorithmic targeting, whereas the lower contribution of social media and mobile ads suggests their limited effectiveness in educational advertising.

Regression Analysis: Predictors of Student Engagement Regression analysis is a statistical method used to examine the extent to which independent variables (predictors) explain the variance in a dependent variable. In the present study, Perception & Ethics and Effectiveness & Outcomes were considered as predictors of Student Engagement with AI-driven digital advertising. The aim of this analysis is to determine whether students' perceptions of ethical concerns and their views on the effectiveness of AI-enabled advertisements significantly influence their overall engagement.

Table 3: Model Summary of Regression Analysis for Student Engagement (N = 400)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.018	2	14.509	.613	.542[b]
	Residual	9398.079	397	23.673		
	Total	9427.097	399			
a. Dependent Variable: Student Engagement						
b. Predictors: (Constant), Effectiveness & Outcomes, Perception & Ethics						

The model summary in Table 3 shows that the predictors Effectiveness & Outcomes and Perception & Ethics account for only 0.3% (R^2 = 0.003) of the variance in student engagement. The adjusted R^2 value (-0.002) further indicates that the predictive power of the model is negligible, and the inclusion of these predictors does not significantly improve the explanation of engagement levels. The low R and R^2 values suggest that neither students' ethical perceptions nor their views on the effectiveness of AI-driven advertisements substantially predict their engagement. In practical terms, this means that student engagement is not determined directly by how students evaluate the ethics or outcomes of AI-enabled campaigns. Rather, engagement may depend more on external factors such as relevance of content, institutional reputation, timing of advertisements, or individual motivation. From a theoretical standpoint, this finding challenges the assumption that ethical concerns and perceived effectiveness are the primary drivers of engagement. Instead, it supports the view that while these dimensions are important for shaping attitudes and perceptions, they may not necessarily translate into behavioral or cognitive engagement. This interpretation aligns with prior research (Popenici & Kerr, 2017; Kahu, 2013) that stresses the multifaceted nature of engagement, which cannot be explained by a limited set of predictors.

Regression Coefficients: Predictors of Perception & Ethics

Regression coefficients provide detailed insights into the individual contribution of each independent variable in explaining the variance of the dependent variable. While the model summary and ANOVA confirm whether the regression model is statistically significant overall, the coefficients table identifies which predictor(s) contribute meaningfully to the prediction. In this study, Effectiveness & Outcomes and Student Engagement were entered as predictors of Perception & Ethics regarding AI-driven digital advertising.

Table 4 shows that Effectiveness & Outcomes was a strong, significant predictor of students' Perception & Ethics (B = 0.716, β = 0.664, $p < 0.001$), indicating that ethical acceptance is strongly influenced by perceived effectiveness. In contrast, Student Engagement was not significant (B = 0.031, β = 0.030, p = 0.423), suggesting that engagement levels do not meaningfully shape ethical evaluations. The constant term (7.289, $p < 0.001$) represents the baseline of ethical perception when predictors are controlled. The regression findings indicate that Perception & Ethics is shaped primarily by Effectiveness & Outcomes rather than Student Engagement. Students evaluate the ethical standing of AI-driven advertisements based on the tangible value and outcomes delivered, not on

Table 4: Regression Coefficients for Predictors of Perception & Ethics

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.289	1.214		6.003	.000
	Effectiveness & Outcomes	.716	.040	.664	17.713	.000
	Student Engagement	.031	.039	.030	.802	.423

a. Dependent Variable: Perception & Ethics

their level of engagement. This is consistent with correlation results ($r = 0.665$, $p < 0.01$), confirming that effectiveness acts as the bridge between ethical trust and digital adoption. Theoretically, this supports the notion of outcome-dependent ethics (Kapoor et al., 2022; Popenici & Kerr, 2017). Practically, it suggests that higher education institutions can strengthen ethical acceptance by ensuring campaigns demonstrate transparency, relevance, and value-added outcomes.

Correlation Analysis among Key Variables

Correlation analysis is a statistical technique used to measure the strength and direction of the relationship between two variables. The correlation coefficient (Pearson's r) ranges between -1 and +1, where values closer to +1 indicate a strong positive relationship, values closer to -1 indicate a strong negative relationship, and values near 0 suggest no meaningful relationship. In the present study, correlation analysis was applied to explore the interrelationships between Student Engagement, Perception & Ethics, and Effectiveness & Outcomes of AI-driven digital advertising.

Correlation analysis showed weak, non-significant relationships between Student Engagement and Perception & Ethics ($r = 0.055$, $p = 0.269$) and between Student Engagement and Effectiveness & Outcomes ($r = 0.038$, $p = 0.446$). This indicates that neither ethical concerns nor perceived effectiveness directly influence engagement. However, a strong positive correlation was found between Perception & Ethics and Effectiveness & Outcomes ($r = 0.665$, $p < 0.01$), suggesting that students view ethical trust and effectiveness as interconnected. Overall, the

Table 5: Correlation Matrix of Student Engagement, Perception & Ethics, and Effectiveness & Outcomes

Correlations				
		Student Engagement	Perception & Ethics	Effectiveness & Outcomes
Student Engagement	Pearson Correlation	1	.055	.038
	Sig. (2-tailed)		.269	.446
	N	400	400	400
Perception & Ethics	Pearson Correlation	.055	1	.665**
	Sig. (2-tailed)	.269		.000
	N	400	400	400
Effectiveness & Outcomes	Pearson Correlation	.038	.665**	1
	Sig. (2-tailed)	.446	.000	
	N	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 6: Chi-Square Test Results for Exposure to AI-driven Advertisements and Platforms of Delivery

Chi-Square Tests			
	Value	df	Asymptotic Significance (2 - sided)
Pearson Chi-Square	79.564[a]	8	.000
Likelihood Ratio	95.198	8	.000
N of Valid Cases	400		
a. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 4.75.			

results confirm that engagement operates independently, while ethics and outcomes are closely linked, shaping perceptions rather than direct involvement (Popenici & Kerr, 2017; Kahu, 2013).

Chi-Square Test Results: Exposure and Platforms of AI-driven Advertisements

The Chi-Square Test of Independence is a non-parametric statistical test used to determine whether two categorical variables are significantly associated. It compares the observed frequencies with the expected frequencies to evaluate whether the distribution of one variable is dependent on the other. In this study, the test was conducted to examine whether students' exposure to AI-driven advertisements is significantly related to the platforms of delivery such as chatbots, emails, Google apps, mobile ads, and social media.

The chi-square test revealed a significant association between exposure to AI-driven advertisements and the platforms of delivery (χ^2 = 79.564, df = 8, $p < 0.001$), confirming that exposure varied by medium. Emails, chatbots, and Google apps were strongly linked with higher recognition, while mobile ads and social media were less frequently identified. This underscores that platform choice is a decisive factor in campaign visibility and recognition. Institutions seeking to maximize effectiveness should prioritize personalized, interactive platforms over generic ones, aligning with prior research emphasizing the superiority of targeted, data-driven communication (Kapoor et al., 2022; Choudhury & Pattnaik, 2020).

Discussion

The findings of this study underscore several critical insights into the ethical and personalized dimensions of AI-driven advertising. First, nearly half of students reported exposure to AI-enabled advertisements, with emails, chatbots, and Google apps emerging as the dominant platforms. This aligns with prior research suggesting that personalized and interactive channels are more effective in building trust and engagement than broad-spectrum platforms such as social media and mobile ads (Kietzmann et al., 2018; Langan et al., 2023). Importantly, the significant chi-square association between exposure and platforms confirms that platform choice is an ethical as well as strategic decision, shaping both visibility and recognition. Second, the regression and correlation analyses provide evidence for the concept of outcome-dependent ethics (Kapoor et al., 2022; Popenici & Kerr, 2017). Students' ethical acceptance of AI-driven advertising was strongly influenced by perceptions of effectiveness and outcomes, while engagement did not emerge as a significant predictor. This suggests that ethical trust in AI campaigns is pragmatic: students are more willing to accept and support technologies that deliver tangible benefits, regardless of abstract moral principles. Such findings extend previous

work on consumer trust (Haenlein & Kaplan, 2019; Wang et al., 2022) to the educational marketing context, demonstrating that effectiveness serves as the bridge between ethical perception and digital adoption. Third, the results reveal that student engagement is multi-dimensional and independent, not easily explained by perceptions of ethics or outcomes alone. This reinforces Kahu's (2013) framework and supports Astin's (1999) notion that engagement is shaped by contextual, institutional, and psychological factors beyond advertising. For higher education institutions, this highlights the importance of complementing AI-driven campaigns with broader strategies that build institutional credibility and academic value. Taken together, the findings contribute theoretically by integrating engagement, ethics, and personalization into a single framework, while also offering practical insights for HEIs. Institutions must prioritize transparent, personalized platforms and demonstrate outcome-oriented value to strengthen ethical trust. Failure to do so risks uneven adoption and skepticism, particularly among students less familiar with AI-enabled systems.

Conclusion

This study provides empirical evidence on how students perceive the ethical and personalized dimensions of AI-driven advertising in higher education. The results show that while exposure to AI-enabled campaigns is growing, its visibility is highly platform-dependent, with emails, chatbots, and Google apps significantly outperforming generic channels. Importantly, ethical perceptions are shaped not by levels of engagement but by perceptions of effectiveness, underscoring the phenomenon of outcome-dependent ethics. For theory, the study extends existing models of student engagement and ethical trust into the underexplored field of AI-driven educational marketing. For practice, it emphasizes the need for institutions to adopt transparent, personalized, and outcome-oriented campaigns to strengthen both engagement and trust. For policy, the findings call for clearer ethical frameworks and regulatory guidelines to ensure responsible use of AI in higher education marketing.

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