



A Study On The Adoption Of Artificial Intelligence Tools In Academic Administration And Decision-Making In Higher Education Institutions

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Abstract: The purpose of this study was to examine how higher education institution (HEI) administrators use and make decisions about using artificial intelligence (AI) in their work, specifically within academic administrations across HEIs located within the Pune Metropolitan Region of Maharashtra. Both TAM and UTAUT were used as theoretical models for this research; a quantitative methodology was also employed. Results from PLS-SEM confirm strong path coefficients for the constructs of effort expectancy, performance expectancy, and social influence on administrator's intentions to adopt AI. Administrators' concern regarding data privacy and the lack of transparency related to algorithms that will drive institutional adoption were found to be statistically significant moderating factors. They significantly restricted the extent to which institutions adopted AI, regardless of whether or not they believed in its potential utility. The current study provides original empirical evidence concerning one of the fastest growing educational metropolitan zones in western India. As this region contains over 800 higher education institutions, many of whom are faced with the strategic imperative of embracing digital transformation, these findings have important implications for Human Resource Practitioners, Academic Policymakers, Institutional Leaders, and Regulatory Bodies charged with creating guidelines for integrating technology within Indian Higher Education. Future research directions include longitudinal studies of the same population over time; cross-sectional studies comparing multiple cities; and qualitative investigations examining the level of readiness of each institution to implement new technologies.

Keywords: Artificial Intelligence, Academic Administration, Higher Education Institutions, Technology Acceptance Model, Administrative Efficiency, Ethical Concerns, Decision-Making, Pune Metropolitan Region.

1. Introduction

Over the past few years, artificial intelligence has moved from being a subject of academic discussion on the periphery to becoming central to how most all higher education institutions operate around the world. AI was previously largely confined to discussions about personalized learning and the development of automated tutoring systems. Now, however, it is common in many university administrative areas and is changing how universities administer admissions, resource allocation, student performance monitoring, hiring faculty members, and making consequential decision-making processes. This rate of transition has been rapid and in many ways disturbing for those who must navigate these changes as administrators, HR personnel, and policymakers in environments with less clear distinctions between human reasoning and machine-based inferencing (George, 2023; Chan, 2023).

The academic literature about AI for higher education administration has utilized a number of conceptual models or theories. The most well-known model is the Technology Acceptance Model (TAM) developed by Davis (1989). It has primarily two key factors in determining whether an individual will be willing to accept a new technology - perceived utility and perceived usability. Ibrahim et al. (2025) and Xue et al. (2026) have also used TAM as their basis when studying the use of AI in higher education administration. Other researchers, particularly those using newer versions of the TAM (i.e. UTAUT) include additional variables that were absent from the original TAM, including, but not limited to, performance expectations, effort expectations, social norms, and enabling conditions. These additional variables provide a broader view than TAM alone to help explain why institutions or individuals may accept or reject technologies (Kim & Lee, 2022; Lin et al., 2023). Additionally, within the context of acceptance and rejection of AI within HEIs, other researchers have identified additional variables to consider, including AI anxiety, ethical concerns, and AI self efficacy. These latter variables are relevant to AI because it is typically autonomous, and the outputs of AI are often non-transparent to the end-user (Sova et al., 2024; Dahri et al., 2025).

In addition to these studies, there are several other sources (e.g., research reports, white papers) on AI adoption among academic administrative staff in Pune. While much of the literature focuses on the development and implementation of artificial intelligence (AI), few studies examine the actual use of AI by educational institutions. This study will help identify how AI is used in educational institutions located in the Pune metropolitan area. Additionally, the study will also provide insight into how well academic administrative personnel in Pune are prepared to integrate AI into their work. A review of previous literature identified that while many studies have examined the use of AI in general, very little literature exists examining the specific use of AI for academic administration purposes.

The importance of the Human Resource (HR) lens when evaluating the adoption of Artificial Intelligence (AI) in academic administrative environments is paramount. All educational institutions are people-based organizations, therefore the use of AI for administrative functions will raise significant questions regarding automation of jobs, skills that may become obsolete, decision-making power and the future roles of humans as they assist in AI-driven administrative processes. In terms of HR, the integration of AI within academic administrators' decision-making process is not simply a technology installation but a fundamental shift in what constitutes work, where decisions will be made and whose ethical responsibility it will be to design, implement and manage AI systems. Therefore, understanding how academic administrators perceive, adopt, reject or modify their usage of AI tools is directly relevant to HR professionals, institutional leaders and policy makers.

The purpose of this study was to answer two main research questions:

- (1) Does there exist a statistically significant positive relationship between the perceived usefulness of AI tools and administrative efficiency in higher education institutions in the Pune Metropolitan region?
 - (2) Do ethical concerns regarding data privacy and algorithmic bias limit or impede academic administrator's adoption of AI tools in making decisions for their institution?
- A literature review is included at the beginning of the paper, then an overview of the research objective/hypotheses is discussed, next is a detailed explanation of the quantitative methodology employed, after which are results from data analysis and hypothesis testing, a section on results/implications, and lastly a summary/conclusion that discusses potential implications of these results and possible future research studies.

2. LITERATURE REVIEW

The use of Artificial Intelligence (AI) in higher education organizations have been a focal point for research within the last five years, as researchers examine the implementation of AI through the lens of teaching/learning; administration; technology; ethics. This review will provide an overview of some of the most relevant research to the themes explored in this dissertation, and will focus specifically on AI usage in administrative and decision making processes.

Crompton & Burke (2023) analyzed global higher education institutions' use of AI in four areas: Intelligent Tutoring Systems; Adaptive Learning Platforms; Grading/Feedback Support; Predictive Analytics. They emphasized how quickly pedagogical uses of AI have progressed, but how slowly and unevenly administrative uses of AI have followed. According to the authors, this difference is due to structural barriers within administrative organizations, an absence of adequate digital infrastructure at many institutions, and a lack of institution-specific guidelines/governance structures regarding the use of AI. Additionally, they stated that there is a risk of biased algorithms being used to make high-stake administrative decisions (such as admissions or financial aid), and suggested that each institution

develop audit protocols to ensure transparency into the AI generated recommendations. Therefore, I find their study particularly relevant because it addresses the difficulties associated with AI in Higher Education Institutions Administration -- a topic that is not adequately represented in most literature focusing primarily on AI opportunities.

The article Varsha (2023) studies how an AI system used in higher education may be biased as a result of the adoption without critical consideration of AI tools based upon training with data generated from historical inequality, and therefore may perpetuate these same historical inequalities. The article was published within a larger academic interdisciplinary dialogue concerning ethics related to AI; the authors use examples from college admission, financial aid and faculty performance evaluations to demonstrate how AI recommendations may consistently disadvantage marginalized students and employees. Varsha's study has specific relevance to the Human Resources emphasis of this current study due to its ability to ground theoretical ethical concerns in specific administrative contexts similar to those found in institutions throughout the Pune Metropolitan region, including several whose development of policies related to data governance and ethics of AI remain at their initial stages.

The author of this paper (George, 2023), examined the pedagogical implications, and the ethical considerations of integrating Artificial Intelligence into Higher Education Administration (HEA). The authors' primary concerns were related to the need to balance the benefits of increased efficiency from using artificial intelligence; with the imperative of maintaining human judgement in making decisions which are potentially high-risk for both students and staff. The authors suggest that institutions of higher education should pursue Human-In-The-Loop Governance (HITL-G); where artificial intelligence acts merely as a support mechanism in providing recommendations, but does not act autonomously in making decisions concerning high-risk areas such as Student Admissions and Performance Evaluations, or other areas of HR function such as Faculty Recruitment and Appraisal.

The present study's conceptual backdrop consists of Crompton & Burke (2023) AI application framework; Fullan et al. (2024) leadership research; Ahmad et al. (2023) decision quality/cognitive dependence findings; Funda & Francke (2024) algorithmic transparency; Dahri et al. (2024) Extended TAM framework; Almasri (2024) generalizability criticism; Varsha (2023) analysis of algorithmic bias; and George (2023) human-in-the-loop hypothesis. These studies establish three persistent, ongoing debates in the literature: between ethical concerns and efficiency; between individual IT acceptance and organizational adoption capacity; and between universal frameworks and localized environments. The present study therefore addresses all three by providing location-specific, empirically generated, quantitative evidence related to administrative staff at universities in the Pune Metropolitan Area – thus adding empirical data for a previously underrepresented geographic region and population.

3. RESEARCH OBJECTIVES AND HYPOTHESES

3.1 RESEARCH OBJECTIVES

The first objective is to determine whether there exists a connection between the level that academic administrators in higher education in Pune believe are useful as an aid for making decisions (AI) with their levels of administrative productivity (efficiency) within the administrative roles they play in these higher education institutions.

The second objective is to measure the effect that ethical considerations such as data privacy and algorithms' potential biases have on the willingness of academic administrators at higher education institutions in the city of Pune to use AI technology for the support of institutional decision-making processes.

3.2 RESEARCH HYPOTHESES

H1: The association between how useful the AI tools are perceived by Academic Administrators and the Administrative Efficiency of Academic Administrators as it relates to the use of AI tools in Higher Education Institutions (HEIs) in the Pune Metropolitan Area is Statistically Significant and Positive.

H2: Concerns about Data Privacy and Algorithmic Bias are negatively correlated with the willingness of Academic Administrators to incorporate the use of AI tools into Institutional Decision Making processes for HEIs in the Pune Metropolitan Area

4. RESEARCH METHODOLOGY

This study is based on a quantitative methodology as it was considered most appropriate for achieving the aims of the research. These aims require the investigation of relationships among abstractly-defined

theoretical concepts, the evaluation of directionally-stated testable hypotheses, and the derivation of generalized findings applicable to all administrative academics within the boundaries of the Pune Metropolitan Area. The methodological orientation of this quantitative study is rooted in an underlying positivistic epistemology. As such, the researcher approaches the data with a value-neutral posture and utilizes numerical evidence to establish either associations or causative relationships. This deductive nature of the study also supports its use of a quantitative methodology since the research hypotheses were generated from established theoretical models (Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology), versus being empirically-derived from unstructured field observation (Lin et al., 2023; Dahri et al., 2024; Davis, 1989)

Data collection occurred using a self-administered, structured survey. The survey contained three thematic areas. The first area concerned demographics (age, sex, years of experience as an administrator). The second area comprised Likert-type scales assessing perceptions of 5 variables; perceived usefulness of artificial intelligence (AI) systems, perceived ease of use of these systems, social influence, administrative efficiency and concerns about ethics. All variables were assessed using 6 Likert-type statements (or a single statement in some cases), rated on a five point Likert scale (from strongly disagree = 1 to strongly agree = 5). The third area assessed intent to adopt or plan to utilize AI systems for specific administrative decision-making processes. Expert panel reviews by 2 technology management academics and 3 academic HR practitioners resulted in establishing content validity of the instrument. Minor changes in the wording of items also occurred due to the comments of the reviewers. Scale reliabilities were evaluated in a pilot test involving 30 non-participants who were ultimately included in the sampling frame. Cronbach's Alpha coefficient values for each variable exceeded .75 thus supporting acceptability in terms of reliability.

5. DATA ANALYSIS AND FINDINGS

5.1 DEMOGRAPHIC PROFILE OF RESPONDENTS (TABLE 1)

Table 1 below presents the combined frequency distribution for the demographic profile of the 256 academic administrators who participated in this study.

Particulars	Frequency	Percentage (%)	Cumulative %
Gender: Male	151	58.98	58.98
Gender: Female	103	40.23	99.21
Gender: Prefer not to say	2	0.79	100.00
Age: Below 30 years	38	14.84	14.84
Age: 30 to 40 years	89	34.76	49.60
Age: 41 to 50 years	97	37.89	87.49
Age: Above 50 years	32	12.51	100.00
Experience: Less than 3 years	41	16.02	16.02
Experience: 3 to 7 years	87	33.99	50.01
Experience: 8 to 15 years	94	36.71	86.72
Experience: More than 15 years	34	13.28	100.00
Institution Type: University/Deemed	47	18.36	18.36
Institution Type: Autonomous College	89	34.76	53.12
Institution Type: Affiliated College	120	46.88	100.00
Total	256	100.00	

The demographics as outlined in Table 1 show some trends when looking at gender, age, length of administrative experience, and type of institution. As it relates to gender, 58.98% (n=151) were men and 40.23% (n=103) were women; there was a slight skewing of gender representation toward males which is typical in the administration of Indian Higher Education Institutions, particularly in the mid-to-senior levels (Roy & Sharma, 2025). The age breakdown of the survey indicated an older respondent base, mostly comprised of administrators in the middle to later stages of their careers. There was a high number of respondents aged 41-50 who represented 37.89% (n=97) of the sample size.

5.2 LIKERT SCALE ANALYSIS FOR HYPOTHESIS 1 (TABLE 2)

The frequency distribution of responses to the six Likert-scale items that were developed to measure administrator's views on AI tool usefulness and administrative efficiency are shown in Table 2. These Likert scale items will be used as the basis for testing Hypothesis 1.

Likert Statements (H1)	Frequency	Percentage (%)	Cumulative %
AI tools reduce time spent on routine admin tasks (Strongly Agree)	93	36.33	36.33
AI tools reduce time spent on routine admin tasks (Agree)	87	33.99	70.32
AI tools reduce time spent on routine admin tasks (Neutral)	44	17.19	87.51
AI tools reduce time spent on routine admin tasks (Disagree)	21	8.20	95.71
AI tools reduce time spent on routine admin tasks (Strongly Disagree)	11	4.29	100.00
AI improves accuracy of student record management (Strongly Agree)	86	33.60	33.60
AI improves accuracy of student record management (Agree)	91	35.55	69.15
AI improves accuracy of student record management (Neutral)	49	19.14	88.29
AI improves accuracy of student record management (Disagree)	19	7.43	95.72
AI improves accuracy of student record management (Strongly Disagree)	11	4.28	100.00
AI aids in data-driven resource allocation decisions (Strongly Agree)	78	30.47	30.47
AI aids in data-driven resource allocation decisions (Agree)	97	37.89	68.36
AI aids in data-driven resource allocation decisions (Neutral)	52	20.31	88.67
AI aids in data-driven resource allocation decisions (Disagree)	18	7.04	95.71
AI aids in data-driven resource allocation decisions (Strongly Disagree)	11	4.29	100.00
Predictive analytics by AI improves enrolment planning (Strongly Agree)	71	27.73	27.73
Predictive analytics by AI improves enrolment planning (Agree)	101	39.45	67.18
Predictive analytics by AI improves enrolment planning (Neutral)	57	22.27	89.45
Predictive analytics by AI improves enrolment planning (Disagree)	17	6.64	96.09
Predictive analytics by AI improves enrolment planning (Strongly Disagree)	10	3.91	100.00
AI-assisted scheduling reduces administrative overhead (Strongly Agree)	68	26.56	26.56
AI-assisted scheduling reduces administrative overhead (Agree)	98	38.28	64.84
AI-assisted scheduling reduces administrative overhead (Neutral)	55	21.48	86.32
AI-assisted scheduling reduces administrative overhead (Disagree)	23	8.98	95.30
AI-assisted scheduling reduces administrative overhead (Strongly Disagree)	12	4.70	100.00
AI improves consistency of HR decisions in academics (Strongly Agree)	62	24.22	24.22
AI improves consistency of HR decisions in academics (Agree)	94	36.72	60.94

AI improves consistency of HR decisions in academics (Neutral)	59	23.04	83.98
AI improves consistency of HR decisions in academics (Disagree)	26	10.16	94.14
AI improves consistency of HR decisions in academics (Strongly Disagree)	15	5.86	100.00

The data show a consistent pattern of overwhelmingly positive views regarding the perceived usefulness of AI tools in terms of facilitating academic administration. For example, when asked if using AI tools would help reduce the time spent on performing routine administrative tasks, 70.32% of the participants indicated they either strongly agree (36.33%) or agree (33.99%) that AI tools can assist them in this regard. Only 12.49% disagreed or strongly disagreed and 17.19% were neutral.

5.3 LIKERT SCALE ANALYSIS FOR HYPOTHESIS 2 (TABLE 3)

Table 3 presents the frequency distribution of responses to the five statements addressing ethical concerns, which form the basis for Hypothesis 2

Likert Statements (H2 - Ethical Concerns)	Frequency	Percentage (%)	Cumulative %
I am concerned that AI systems may compromise student data privacy (Strongly Agree)	108	42.19	42.19
I am concerned that AI systems may compromise student data privacy (Agree)	79	30.86	73.05
I am concerned that AI systems may compromise student data privacy (Neutral)	37	14.45	87.50
I am concerned that AI systems may compromise student data privacy (Disagree)	21	8.20	95.70
I am concerned that AI systems may compromise student data privacy (Strongly Disagree)	11	4.30	100.00
Algorithmic bias in AI may lead to unfair institutional decisions (Strongly Agree)	97	37.89	37.89
Algorithmic bias in AI may lead to unfair institutional decisions (Agree)	83	32.42	70.31
Algorithmic bias in AI may lead to unfair institutional decisions (Neutral)	41	16.02	86.33
Algorithmic bias in AI may lead to unfair institutional decisions (Disagree)	22	8.59	94.92
Algorithmic bias in AI may lead to unfair institutional decisions (Strongly Disagree)	13	5.08	100.00
Lack of transparency in AI decisions reduces my trust in the system (Strongly Agree)	91	35.55	35.55
Lack of transparency in AI decisions reduces my trust in the system (Agree)	88	34.38	69.93
Lack of transparency in AI decisions reduces my trust in the system (Neutral)	42	16.40	86.33
Lack of transparency in AI decisions reduces my trust in the system (Disagree)	23	8.98	95.31
Lack of transparency in AI decisions reduces my trust in the system (Strongly Disagree)	12	4.69	100.00
Ethical concerns deter me from fully adopting AI in administration (Strongly Agree)	84	32.81	32.81
Ethical concerns deter me from fully adopting AI in administration (Agree)	91	35.55	68.36
Ethical concerns deter me from fully adopting AI in administration (Neutral)	44	17.19	85.55
Ethical concerns deter me from fully adopting AI in administration (Disagree)	25	9.76	95.31
Ethical concerns deter me from fully adopting AI in administration (Strongly Disagree)	12	4.69	100.00

administration (Strongly Disagree)			
Institutions should have clear AI ethics policies before adoption (Strongly Agree)	119	46.48	46.48
Institutions should have clear AI ethics policies before adoption (Agree)	83	32.42	78.90
Institutions should have clear AI ethics policies before adoption (Neutral)	31	12.11	91.01
Institutions should have clear AI ethics policies before adoption (Disagree)	14	5.47	96.48
Institutions should have clear AI ethics policies before adoption (Strongly Disagree)	9	3.52	100.00

The results of table three clearly indicate a very high level of concern about ethics by academic leaders, as 72.58% of respondents either agreed or strongly agreed that there were various risk factors associated with data privacy, algorithmic bias and institutional transparency. The concern over student data privacy had the largest number of respondents who "strongly" agreed to the statement and had the highest cumulative percentage (73.05%) for both batteries of hypotheses, demonstrating that this is the most prominent and widely held concern among those investigated. the cumulative total of responses to the question of whether algorithmic bias could result in inequitable institutional decision-making was 70.31% with 37.89% being those who indicated that they believed it would.

5.4 HYPOTHESIS TESTING RESULTS (TABLE 4)

Table 4 presents the results of the independent-samples t-test used to test Hypothesis 1 and the PLS-SEM analysis used to test Hypothesis 2, both of which were selected based on the nature of the variables and the research objectives.

Statistical Test / Parameter	Value / Statistic	Degrees of Freedom / p-value	Result
H1: Independent-Samples t-Test			
Mean Score (Perceived Usefulness)	3.87	N/A	N/A
Mean Score (Administrative Efficiency)	3.74	N/A	N/A
t-Statistic	5.83	df = 254	p < .001
Cohen's d (Effect Size)	0.73	N/A	Moderate-Large
Decision on H1	Accepted	N/A	Significant positive relationship confirmed
H2: PLS-SEM Path Coefficients			
Ethical Concern -> Adoption Intention (Path Coeff.)	-0.47	p < .001	Significant Negative Effect
Data Privacy Concern -> Adoption Intention	-0.38	p < .001	Significant
Algorithmic Bias Concern -> Adoption Intention	-0.31	p = .003	Significant
R-squared (Adoption Intention)	0.61	N/A	Model explains 61% variance
AVE (Ethical Concern construct)	0.58	N/A	Convergent Validity Acceptable
Composite Reliability (Ethical Concern)	0.83	N/A	Internal Consistency Confirmed
Decision on H2	Accepted	N/A	Significant negative influence confirmed

For Hypothesis 1, an independent samples t-test compared mean perceived usefulness scores to mean administrative efficiency scores for all participants. On average, participants rated perceived usefulness with a score of 3.87 (SD = 0.64), and they rated administrative efficiency with a score of 3.74 (SD = 0.71).

Hypothesis 2 utilized partial least squares structural equation modeling (PLS-SEM) to analyze the relationship between ethical concern (which includes the factors of data privacy and algorithmic bias) and adoption intention. The PLS-SEM analysis revealed a negative path coefficient of -0.47 ($p < .001$) between the composite ethical concern construct and adoption intention.

6. RESEARCH FINDINGS

The overall results of this study provide a complex view of the use of artificial intelligence (AI) by academic administrators in higher education within the Pune metropolitan region. While there are certainly positive aspects, such as the fact that academic administrators at universities located in Pune consider AI-based tools to be beneficial for the performance of their duties, and further the perceptions of these benefits correlate with reported levels of administrative productivity; there are also concerns regarding the potential negative impacts of widespread adoption. The statistical analysis ($p < .001$, $d = 0.73$) demonstrates both statistically significant differences in how academic administrators perceive the value of using AI-based tools to enhance productivity versus those that do not. Further, it suggests an operationally relevant difference in the magnitude of these values. In addition, the results from the Likert scale questionnaires demonstrate consistently large numbers of affirmative responses for each area where AI-based tools can potentially provide assistance. Such areas include student records, resource allocation, enrollment planning, scheduling, and making decisions related to Human Resources. Administrators in the 30-50 year old category with medium to extensive experience demonstrated even larger rates of affirmative response when compared to other demographic categories. These results are counterintuitive to many assumptions made about long time administrators being either reluctant or unwilling to embrace new technologies. Instead, the results indicate that long time administrators who recognize inefficiencies created through manually driven, paper based systems are likely some of the first to adopt technologies like AI that can create faster and more accurate work environments.

7. CONCLUSION

This research project examined two issues concerning AI adoption in academic administration and decision-making in higher education institutions within the Pune Metropolitan Region: First, does the perceived value of AI tools have a significant positive correlation to administrative efficiency? Second, do ethical considerations relating to data privacy and algorithmic bias have a significant negative correlation to administrators' willingness to use AI in institutional decision-making? Both hypotheses were supported through the application of quantitative methods to support our claims. The t-test results for hypothesis one indicated a moderate-to-large and statistically significant positive correlation between perceived utility and administrative efficiency ($t=5.83$, $p < .001$, $d=.73$), and the PLS-SEM results for hypothesis two indicated a significant negative path between the administrator's ethical concern and their intention to use AI in institutional decision-making ($\beta=-.47$, $p < .001$). The demographics of the respondents in this study experienced, mid-career administrators representing multiple types of institutions provide some evidence that these findings may represent the broader administrative realities in the HEI's in the Pune Metropolitan Region as opposed to being specific to a particular subset of administrative professionals. Furthermore, we observed a pattern of responses on the Likert-type scales that were consistent with the directionally stated relationships implied by TAM and UTAUT, with most of the items measuring the perceived utility of AI having means well above the midpoint of the scale and almost all of the items assessing the ethical concerns regarding data governance and algorithms having means that reflect a high degree of concern among respondents. Overall, these findings suggest an administrative context where there is considerable interest in using AI to enhance administrative efficiency; however, there also exists a wide-spread recognition of the ethical implications associated with implementing AI systems. The lack of formalized institutional level governance structures for AI in many of the institutions sampled appears to be a critical structural element influencing this dynamic.

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