

A Study on the Factors Affecting Artificial Intelligence Adoption Among Faculty Members in Higher Education Institutions in the Mumbai Region

Charmi Chothani^{1*}, Dr. C. Sunanda Yadav²

¹ Ph.D Scholar, Tilak Maharashtra Vidyapeeth, Pune, Maharashtra, India

sunandayadav@yahoo.com

² Faculty, Tilak Maharashtra Vidyapeeth, Pune, Maharashtra, India

Abstract: By assisting with teaching, research, administrative tasks, and student involvement, artificial intelligence (AI) is progressively changing higher education. However, faculty members' acceptance of AI is conditional upon their perceptions of its use, usability, and institutional backing. This study looks at the variables influencing faculty members' adoption of AI in Mumbai-based higher education institutions. The study examines the impact of perceived usefulness, perceived ease of use, and institutional support on AI adoption using the Technology Acceptance Model (TAM). 103 faculty members from higher education institutions in the Mumbai area were given a standardized questionnaire with 18 Likert-scale items. Multiple linear regression, Cronbach's alpha, and descriptive statistics were used to analyse the data. The results show that AI adoption is most strongly positively impacted by perceived usefulness ($\beta = 0.546$, $p < 0.001$), followed by perceived ease of use ($\beta = 0.222$, $p = 0.032$). However, there is no statistically significant effect of institutional support for AI adoption ($\beta = 0.124$, $p = 0.168$). The regression model accounts for 43.1% of the variance in AI adoption ($R^2 = 0.431$) and is statistically significant ($F = 25.040$, $p < 0.001$). The results emphasize how crucial it is to show the value and usability of AI tools in order to promote faculty adoption in higher education.

Keywords: Artificial Intelligence, AI Adoption, Higher Education, Faculty Members, Technology Acceptance Model, Perceived Usefulness, Perceived Ease of Use, Institutional Support

1. INTRODUCTION

By assisting with teaching, research, assessment, administrative tasks, and student involvement, artificial intelligence (AI) is progressively changing higher education. The growing availability of AI-powered tools has created opportunities for faculty members to improve academic and professional efficiency. However, faculty members' opinions of AI's use, usability, and institutional backing may vary, therefore its availability does not guaranty its acceptance.

Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are two important aspects in Davis's (1989) Technology Acceptance Model (TAM), which offers a practical framework for

comprehending technology acceptance. In higher education, faculty members are more likely to adopt AI when they perceive that it can improve their academic activities and when it is relatively easy to use. In addition, institutional factors such as training, infrastructure, technical assistance, and administrative support may influence AI adoption.

The Mumbai region provides an important context for examining faculty adoption of AI within higher education. Thus, this study focuses on how faculty members at higher education institutions in the Mumbai region use artificial intelligence in relation to perceived usefulness, perceived ease of use, and institutional support. Multiple regression analysis is used in the study to figure out each of these factors' relative contributions to AI adoption.

2. LITERATURE REVIEW

A popular approach for understanding technology adoption is the Technology Acceptance Model (TAM), which Davis (1989) suggested. According to the concept, two important factors influencing technology acceptability are perceived usefulness (PU) and perceived ease of use (PEOU). PEOU is the degree to which a technology is thought to be simple to use and understand, whereas PU is the degree to which a person feels that a technology enhances performance. TAM is pertinent for analysing faculty adoption of AI because it has also been applied to new technologies, such as AI.

AI is increasingly being used in higher education for teaching, research, assessment, personalized learning, and administrative activities. However, effective integration depends on faculty members' attitudes and readiness to apply AI in addition to the availability of technology. Recent studies cited in the present study indicate that educators' attitudes, perceived benefits, training, institutional support, and responsible-use guidelines can influence AI adoption.

Perceived Usefulness is expected to play an important role in AI adoption because faculty members are more inclined to employ AI if they think it can improve teaching effectiveness, research productivity, and administrative efficiency. Previous research has identified perceived usefulness as an important determinant of faculty attitudes and intentions toward generative AI adoption.

Perceived Ease of Use represents the degree to which faculty members consider AI tools easy to understand, learn, and integrate into their academic activities. Existing studies indicate that

user-friendly AI technologies and adequate training can encourage adoption by reducing the effort associated with technology use.

Institutional Support includes training, technological infrastructure, technical assistance, administrative encouragement, and organizational policies that facilitate technology adoption. Previous research suggests that supportive institutional environments can encourage faculty members to use AI, although the strength of this relationship may vary across contexts.

Overall, the literature indicates that AI adoption among faculty members may be influenced by both **individual perceptions and institutional conditions**. Accordingly, the present study examines Perceived Usefulness, Perceived Ease of Use, and Institutional Support as predictors of Artificial Intelligence Adoption among faculty members in higher education institutions in the Mumbai region.

Research Gap

Although existing studies have examined Artificial Intelligence adoption in higher education, limited empirical research has investigated the combined influence of Perceived Usefulness, Perceived Ease of Use, and Institutional Support on AI Adoption among faculty members. Further, context-specific evidence from higher education institutions in the Mumbai region remains limited. Existing literature also provides varied evidence regarding the role of institutional factors in AI adoption. Therefore, this study addresses the gap by examining these three factors simultaneously and determining their relative contribution to Artificial Intelligence Adoption among faculty members in higher education institutions in the Mumbai region.

3. RESEARCH OBJECTIVES AND HYPOTHESES

3.1 Research Objectives

1. To check as to how academicians feel about the application of AI in higher education.
2. To investigate how institutional support, perceived usefulness, and perceived ease of use affect artificial intelligence faculty members' adoption.
3. To ascertain how much institutional support, perceived usefulness, and perceived ease of use contribute to the explanation of artificial intelligence adoption among faculty members in Mumbai-area higher education institutions.

3.2 Hypotheses

H01: Perceived Usefulness does not have a significant influence on Artificial Intelligence Adoption among faculty members.

H02: Perceived Ease of Use does not have a significant influence on Artificial Intelligence Adoption among faculty members.

H03: Institutional Support does not have a significant influence on Artificial Intelligence Adoption among faculty members.

4. RESEARCH METHODOLOGY

The study used a descriptive and explanatory research approach to investigate the variables influencing faculty members' adoption of artificial intelligence (AI) in Mumbai-based higher education institutions. Faculty members employed by Mumbai-based higher education institutions made up the study population.

A **convenience sampling technique** was employed, and Information was gathered from **103 faculty members** through a structured questionnaire administered using online and offline modes. The questionnaire consisted of **18 Likert-scale items** distributed across four sections. Sections A, B, and C contained five items each measuring Perceived Usefulness, Perceived Ease of Use, and Institutional Support, respectively, while Section D contained three items measuring Artificial Intelligence Adoption.

In the study, **Artificial Intelligence Adoption (AIA)** was the dependent variable, while **Perceived Usefulness (PU)**, **Perceived Ease of Use (PEOU)**, and **Institutional Support (IS)** were the independent variables. The results were summarized using descriptive statistics, the reliability of the measuring scales was evaluated using Cronbach's alpha, and the impact of the three independent factors on AI adoption was investigated using multiple linear regression.

The regression model was specified as:

$$AIA = \beta_0 + \beta_1PU + \beta_2PEOU + \beta_3IS + \varepsilon$$

The hypotheses were tested at the **5% level of significance**.

5. DATA ANALYSIS

5.1 Respondent Profile

A total of **103 faculty members** participated in the study. The largest proportion of respondents belonged to the **41–50 years** age group (38.8%), followed by those below 30 years (30.1%). In terms of teaching experience, 39.8% had 11–15 years of experience, while 30.1% had more than 15 years. Regarding prior experience with AI tools, 39.8% reported frequent use, 31.1% occasional use, and 29.1% regular use.

Table 1. Respondent Profile (N = 103)

Variable	Category	Frequency	%
Age	Below 30 years	31	30.1
	31–40 years	21	20.4
	41–50 years	40	38.8
	Above 50 years	11	10.7
Teaching Experience	Less than 5 years	10	9.7
	5–10 years	21	20.4
	11–15 years	41	39.8
	More than 15 years	31	30.1
AI Experience	Frequently Used	41	39.8
	Occasionally Used	32	31.1
	Regular User	30	29.1

5.2 Descriptive Statistics

Perceived Usefulness recorded the highest mean score (**M = 4.18, SD = 0.62**), indicating favourable perceptions of the benefits of AI. AI Adoption also recorded a relatively high mean (**M = 4.07, SD = 0.59**), followed by Perceived Ease of Use (**M = 3.95, SD = 0.68**). Institutional Support recorded the lowest mean (**M = 3.62, SD = 0.71**).

Table 2. Descriptive Statistics

Variable	Mean	SD
Perceived Usefulness	4.18	0.62
Perceived Ease of Use	3.95	0.68
Institutional Support	3.62	0.71
AI Adoption	4.07	0.59

5.3 Reliability Analysis

All four constructs showed good internal consistency, with Cronbach's alpha values ranging from 0.84 to 0.89.

Table 3. Reliability Analysis

Construct	Cronbach's Alpha
Perceived Usefulness	0.89
Perceived Ease of Use	0.86
Institutional Support	0.84
AI Adoption	0.88

5.4 Multiple Regression Analysis

The impact of perceived usefulness, perceived ease of use, and institutional support on AI adoption was investigated using multiple linear regression. The total regression model explained 43.1% of the variance in AI Adoption ($R^2 = 0.431$; Adjusted $R^2 = 0.414$) and was statistically significant ($F = 25.040$, $p < 0.001$).

Table 4. Multiple Regression Results

Predictor	B	β	t	p
Constant	-0.328	—	-0.350	0.727
Perceived Usefulness	0.527	0.546	5.915	<0.001
Perceived Ease of Use	0.512	0.222	2.172	0.032
Institutional Support	0.090	0.124	1.389	0.168

Dependent Variable: AI Adoption

AI adoption was most significantly positively impacted by perceived usefulness ($\beta = 0.546$, $p < 0.001$), followed by perceived ease of use ($\beta = 0.222$, $p = 0.032$). The influence of institutional support was positive but not statistically significant ($\beta = 0.124$, $p = 0.168$).

5.5 Hypothesis Testing

Table 5. Hypothesis Testing

Hypothesis	Relationship	p-value	Decision
H01	Perceived Usefulness $\rightarrow$ AI Adoption	<0.001	Rejected
H02	Perceived Ease of Use $\rightarrow$ AI Adoption	0.032	Rejected
H03	Institutional Support $\rightarrow$ AI Adoption	0.168	Failed to Reject

At the 5% significance level, H01 and H02 were rejected, indicating significant positive influences of Perceived Usefulness and Perceived Ease of Use on AI Adoption. H03 was not rejected due to the lack of a statistically significant independent influence from institutional support.

6. CONCLUSION

This study examined the factors affecting Artificial Intelligence Adoption among faculty members in higher education institutions in the Mumbai region. According to the results, faculty members' opinions of AI are typically positive. The best predictor of AI adoption is perceived usefulness, which is followed by perceived ease of use. Both factors showed

statistically significant positive influences on AI Adoption. In contrast, **Institutional Support**, although positively related to AI Adoption, did not demonstrate a statistically significant independent influence in the present study.

The findings reinforce The Technology Acceptance Model's applicability in comprehending faculty AI adoption and suggest that demonstrating the practical benefits and usability of AI tools should be a priority for higher education institutions. Institutions can further facilitate adoption through appropriate training, infrastructure, technical assistance, and clear guidance on responsible AI use. Overall, the study provides empirical evidence on the factors associated with faculty AI adoption within the Mumbai higher education context.

References

1. Alenezi, M. (2024). Factors influencing artificial intelligence adoption in higher education institutions: The role of organizational support and technological readiness. *Education and Information Technologies*, 29(8), 10125–10147.
2. Amir-Rudin, A., et al. (2025). *Validating the Acceptance of Artificial Intelligence (AI) in Higher Education Institutions*. EBP Proceedings.
3. Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*. *MIS Quarterly*, 13(3), 319–340.
4. Ghimire, A., & Edwards, J. (2024). *Generative AI Adoption in Classroom in Context of Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT)*.
5. Ibrahim, F. (2025). *The Technology Acceptance Model and Adopter Type: Understanding Attitudes Toward AI Usage*. *Frontiers in Artificial Intelligence*.
6. Miranda, F. J., Rubio, S., Chamorro-Mera, A., & Pérez-Mayo, J. (2025). Exploring the adoption of generative artificial intelligence among university teachers: An extended technology acceptance model approach. *Higher Education Research & Development*. Advance online publication.
7. Najjar, N. (2025). Faculty perceptions of AI use in higher education: A case study. *Education Sciences*, 16(1), 55.
8. Popović Šević, N., Šević, A., Slijepčević, M., & Krstić, J. (2025). AI adoption in higher education: Exploring attitudes and perceived benefits between users and non-users. *Online Journal of Communication and Media Technologies*, 15(4), e202528.

9. Shata, A. (2025). Faculty perceptions and the adoption of generative AI. *International Journal of Educational Technology in Higher Education*, 22(1).
10. Song, Y. (2025). *An Empirical Study Based on the Technology Acceptance Model and AI Technology Acceptance*. Systems.