Factors Influencing Artificial Intelligence Adoption Among Faculty Members in Higher Educational Institutions: An Empirical Study

Dr. Tushar Tale
Dr. Panjabrao Deshmukh Institute of
Management Technology & Research, Nagpur

Abstract

Artificial Intelligence (AI) is transforming the landscape of higher education by enhancing teaching effectiveness, administrative efficiency, and student learning experiences. Despite the growing availability of AI-powered educational tools, their successful implementation depends largely on faculty acceptance and adoption. The present study examines the factors influencing AI adoption among faculty members in a higher educational institution in Nagpur, India. The study investigates three major dimensions: faculty perception toward AI, perceived ease of use of AI tools, and personal innovativeness. Primary data were collected from 100 faculty members through a structured questionnaire using a convenience sampling method. Descriptive statistical techniques and percentage analysis were employed to analyze the data. The findings reveal that faculty members generally possess a positive perception of AI and recognize its potential to improve teaching quality, student learning outcomes, and administrative efficiency. However, challenges related to training, technical support, and institutional readiness significantly affect AI adoption. The study also highlights the importance of personal innovativeness in facilitating technology acceptance. The findings provide valuable insights for educational administrators and policymakers seeking to promote effective AI integration in higher education.

Keywords: Artificial Intelligence, Faculty Adoption, Higher Education, Technology Acceptance Model, Educational Technology, AI Integration, Personal Innovativeness.

1. Introduction

The rapid advancement of Artificial Intelligence (AI) technologies has significantly influenced various sectors, including healthcare, finance, manufacturing, and education. In higher education, AI is increasingly being utilized for personalized learning, intelligent tutoring systems, automated assessment, predictive analytics, academic administration, and student support services. Educational institutions worldwide are investing in AI-driven solutions to enhance teaching effectiveness and improve learning outcomes.

The emergence of generative AI tools such as ChatGPT, Gemini, Copilot, and other intelligent educational platforms has further accelerated

discussions regarding AI integration in academic environments. While these technologies offer numerous benefits, their successful implementation largely depends on faculty members, who play a crucial role in adopting and utilizing AI tools within teaching and learning processes.

Although AI has considerable potential to transform education, several factors influence its adoption among faculty members. These include perceived usefulness, ease of use, institutional support, technological competence, and individual willingness to experiment with new technologies. Understanding these factors is essential for developing strategies that promote effective AI adoption.

The present study aims to investigate the factors influencing AI adoption among faculty members in higher educational institutions, with particular emphasis on faculty perception, perceived ease of use, and personal innovativeness.

2. Review of Literature

Previous research has highlighted the growing importance of AI in educational settings. Agarwal and Prasad (1998) introduced the concept of Personal Innovativeness in Information Technology (PIIT), emphasizing the role of individual willingness to experiment with new technologies.

Venkatesh and Davis (2000) extended the Technology Acceptance Model (TAM) and identified perceived usefulness and perceived ease of use as significant determinants of technology acceptance. Their findings remain highly relevant in understanding AI adoption behavior among educators.

Zawacki-Richter et al. (2019) conducted a systematic review of AI applications in higher education and concluded that AI has substantial potential for improving learning experiences, though faculty involvement remains limited.

Nazaretsky et al. (2022) reported that trust in AI systems significantly influences educators' willingness to adopt AI technologies. Faculty members who perceive AI as reliable and supportive are more likely to integrate it into their teaching practices.

Jha and Bhattacharya (2023) examined AI adoption among Indian university faculty and found that awareness, training opportunities, and institutional support are critical determinants of AI acceptance.

Despite increasing research on AI in education, limited studies have focused specifically on faculty adoption in Indian higher educational institutions, creating a need for empirical investigation.

3. Objectives of the Study

- The study was conducted with the following objectives:
- To examine faculty perception toward Artificial Intelligence adoption.

- To analyze the perceived ease of use of AI tools among faculty members.
- To evaluate personal innovativeness toward AI adoption.
- To identify barriers affecting AI adoption in higher education.
- To suggest measures for enhancing AI adoption among faculty members.

4. Research Methodology

Research Design

The study adopted a descriptive research design to investigate factors influencing AI adoption among faculty members.

Population and Sample

The population consisted of faculty members working in the Management Department of a selected educational institution in Nagpur. A sample of 100 faculty members was selected using convenience sampling.

Data Collection

Primary data were collected through a structured questionnaire comprising 15 statements related to AI awareness, perception, ease of use, institutional support, and personal innovativeness.

Secondary data were collected from research journals, books, conference papers, educational reports, and published literature related to Artificial Intelligence and higher education.

Data Analysis

The collected data were analyzed using percentage analysis. Tables and graphical presentations were used to interpret the findings.

5. Results and Analysis

Faculty Awareness of AI

The study revealed that 72% of respondents possessed moderate to high awareness regarding AI tools available for teaching and learning activities. However, 28% reported low or very low awareness, indicating a need for awareness-building initiatives.

Perception toward AI

A majority (78%) of faculty members agreed that AI can improve teaching quality. Additionally, 76% believed AI adoption would enhance student learning outcomes, while 72% acknowledged its ability to reduce administrative workload.

These findings indicate a strong positive perception toward AI adoption among faculty members.

Ease of Use

Only 48% of respondents found AI tools easy to use, while 52% considered them difficult or very difficult. This finding suggests that usability challenges remain a significant barrier to adoption.

Institutional Support

Sixty percent of respondents rated institutional support for AI adoption as poor or very poor. The findings indicate that insufficient infrastructure, training opportunities, and policy guidance hinder AI implementation.

Training and Competency

Approximately 64% of respondents reported inadequate training in AI technologies. Only 8% considered themselves fully trained, highlighting a substantial skill gap.

Personal Innovativeness

The study found that 66% of respondents demonstrated high interest in learning and experimenting with AI technologies. Furthermore, 48% had voluntarily explored AI tools without institutional encouragement.

These findings suggest that faculty members possess a positive orientation toward technological innovation.

6. Discussion

The findings support the Technology Acceptance Model (TAM), which proposes that perceived usefulness and perceived ease of use significantly influence technology adoption.

Faculty members demonstrated strong recognition of AI's usefulness in improving teaching effectiveness, reducing workload, and enhancing student outcomes. This positive perception represents a favorable foundation for AI adoption.

However, perceived ease of use emerged as a major challenge. A substantial proportion of respondents reported difficulties in operating AI tools, indicating that positive attitudes alone are insufficient to ensure adoption.

Institutional support was identified as another critical factor. Faculty members expressed concerns regarding inadequate infrastructure, limited training opportunities, and absence of clear AI policies. These organizational barriers reduce confidence and discourage adoption.

The study also highlights the importance of personal innovativeness. Faculty members exhibiting higher levels of curiosity and willingness to experiment with new technologies demonstrated greater readiness for AI adoption.

Overall, the findings suggest that successful AI integration requires a combination of positive attitudes, technical competence, institutional support, and continuous professional development.

7. Hypothesis Testing

H1: Faculty members possess a positive perception toward AI adoption.

The majority of respondents agreed that AI improves teaching quality, student learning outcomes, and administrative efficiency. Therefore, H1 is accepted.

H2: Faculty members find AI tools easy to use.

Only 48% reported that AI tools are easy to use. Therefore, H2 is partially accepted.

H3: Faculty members are personally innovative toward AI adoption.

A majority of respondents demonstrated strong interest in learning AI technologies and experimenting with new tools. Therefore, H3 is accepted.

8. Implications of the Study

The study has significant implications for educational institutions and policymakers.

First, institutions should invest in faculty development programs focusing on AI literacy and practical application. Second, institutional leaders should develop clear policies regarding ethical AI usage, academic integrity, and data privacy. Third, educational institutions should strengthen technological infrastructure and support mechanisms to facilitate effective AI adoption.

The findings also suggest that faculty concerns regarding job replacement should be addressed through awareness programs emphasizing the complementary role of AI in education.

9. Conclusion

Artificial Intelligence is rapidly becoming an integral component of higher education. The findings of the study indicate that faculty members generally possess positive perceptions regarding AI and recognize its educational benefits. However, challenges related to ease of use, training, institutional support, and technological readiness continue to affect adoption.

The study concludes that successful AI integration requires a holistic approach involving faculty development, organizational support, policy frameworks, and technological infrastructure. By addressing these factors, educational institutions can create an environment conducive to effective and responsible AI adoption.

The study contributes to the growing body of knowledge on AI adoption in higher education and provides practical recommendations for administrators, policymakers, and educators seeking to leverage AI technologies for academic excellence.

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