

Adoption of AI Tools Among Faculty Members in Higher Education

Dr. Ramitha N.B¹, Ms. M. Namitha², Avinash C³

¹Assistant Professor and HOD, Department of Logistics and Finance, AJK College of Arts and Science (Autonomous), Coimbatore, Tamil Nadu, India. ORCID: <https://orcid.org/0009-0008-6807-677X>,
Email: ramithanair@ajkcas.com

²Assistant Professor, Department of Management Studies, AJK College of Arts and Science (Autonomous), Coimbatore, Tamil Nadu, India. Email: namitha@ajkcas.com

³PhD Research Scholar, Department of Business Administration, Annamalai University, Tamil Nadu, India. ORCID: <https://orcid.org/0009-0003-8112-1081>, Email: avinashauphd@gmail.com

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ABSTRACT

Nowadays Artificial Intelligence (AI) has emerged as a transformative technology in the education sector, offering innovative solutions for teaching, learning, assessment, and research. The adoption of AI tools among faculty members has significantly increased in recent years due to their ability to enhance productivity, personalize learning experiences, and improve academic outcomes. This study examines the adoption of AI tools among faculty members in higher education institutions. The research focuses on understanding the level of awareness, usage patterns, satisfaction levels, and perceived benefits and challenges associated with AI tools. Data were collected from 86 faculty members using a structured questionnaire. The findings indicate that AI tools are widely used for content preparation, research assistance, and student engagement. While faculty members recognize the advantages of AI in improving teaching effectiveness, concerns regarding accuracy, ethical issues, and overdependence remain significant challenges.

Keywords: Artificial Intelligence, Higher Education, Faculty Members, Technology Adoption, Teaching Effectiveness, Educational Innovation.

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Introduction and Background:

Artificial Intelligence (AI) is becoming an important part of the education system and is changing the way teaching and learning take place in higher education institutions. Nowadays, many faculty members use AI tools such as ChatGPT, Gemini, Grammarly, and other applications to prepare study materials, conduct research, create presentations, and support students in their learning process. These tools help teachers complete their academic tasks more efficiently and improve the quality of education. As the use of technology in education continues to increase, faculty members are showing greater interest in adopting AI tools for various academic purposes. At the same time, issues such as lack of training, reliability of information, and ethical concerns influence the effective use of these technologies. Therefore, it is important to study the adoption of AI tools among faculty members and understand their role in enhancing teaching effectiveness and student learning in higher education.

Objective of Study

1. To examine the adoption and usage of AI tools among faculty members in higher education institutions.

2. To identify the benefits and challenges associated with the use of AI tools in teaching and learning.
3. To analyze the satisfaction level of faculty members regarding AI tools and their impact on student knowledge development.

Review of Literature:

Norah Basheer Alotaibi (2026) in her study **Adoption of AI tools in Education: Examining influencing factors and their impact on students' critical thinking skills** This study is an investigation of the influencing factors of AI tools adoption among university students, particularly in their learning, and it investigates the adoption's relationship to their critical thinking and engagement in learning. The study is underpinned by the Theory of Planned Behavior (TPB) with additional integration of contextual antecedents, namely, accessibility, education and training, ethical awareness, cognitive development, and cultural perspectives, in a framework that explains behavior and cognition. It is an exploratory sequential mixed-method study that combines qualitative interviews involving 30 Saudi university students and a quantitative survey of 728 students.

Gomathi Agathursamy (2024) her study **Faculty Perspectives On The Adoption Of Ai Tools In Education And Research** Artificial Intelligence

(AI) is increasingly transforming education and research by enhancing teaching effectiveness, improving learning experiences, and supporting academic research activities. The adoption of AI tools in higher education depends on factors such as faculty attitudes, technological skills, institutional support, and ethical considerations. Faculty members play a crucial role in integrating AI into teaching and research practices. This study examines faculty perspectives on the adoption of AI tools in higher education and identifies the factors influencing their usage. Data were collected from 100 faculty members through structured interviews and surveys and analyzed using statistical techniques. The findings indicate that faculty members generally recognize the benefits of AI in improving productivity, student engagement, and research efficiency. However, concerns regarding ethical issues, technological challenges, and job displacement continue to affect AI adoption. The study emphasizes the importance of faculty training, institutional support, and ethical guidelines to ensure the responsible and effective use of AI tools in higher education.

Habeeb Ur Rahiman and Rashmi Kodikal (2023) in their study **Revolutionizing education: Artificial intelligence empowered learning in higher education** this study involved Global businesses are actively embracing Industry 4.0 and digital transformation. Simultaneously, the education sector is leveraging digital tools to foster personalized learning and equity. Universities transcending borders and students becoming increasingly global have opened new frontiers through the use of artificial intelligence (AI)-based tools in education. Since the role of AI is inevitable in future education, current research aims to identify the level of awareness of faculty members on the applicability and adoption of artificial intelligence. The study also intended to discover how AI enhanced their learning experience and impacted the degree of work engagement of teachers in higher education. A cluster and multi-stage sampling method was employed to select 250 faculty members from QS (Quacquarelli Symonds) ranked institutions operating in hybrid education modes. Utilizing a quantitative research approach and a structural equation model, factors influencing AI adoption in this context were explored. The findings revealed that AI implementation led to the evolution of robust evaluation and assessment methods, resulting in heightened faculty engagement levels. The study identified that perceived risk, performance expectancy, and awareness play significant roles in influencing work engagement and the adoption of AI within the higher education system through mediating variables, specifically attitude, and behavior

Research Methodology

The study adopted a descriptive survey research design to examine the adoption of AI tools among faculty members in higher education institutions. The research was conducted among faculty members working in various higher education institutions. A total of 86 faculty members were selected as respondents for the study. The convenience sampling technique was used to collect data from the respondents based on their accessibility and willingness to participate.

Advantages of AI Tools in Higher Education:

Artificial Intelligence tools help faculty members improve their teaching efficiency and overall productivity by reducing the time required for routine academic tasks. They support educators in preparing study materials, lesson plans, presentations, and other instructional content more effectively. AI tools also assist faculty members in conducting academic research, reviewing literature, and analyzing data for research purposes. Furthermore, these technologies enhance student engagement by providing interactive learning experiences and supporting personalized learning approaches. In addition, AI tools help save time in administrative activities, assessment processes, and evaluation tasks, allowing faculty members to focus more on teaching and student development.

Drawbacks of AI Tools

- Possibility of inaccurate or misleading information.
- Overdependence on technology.
- Concerns regarding academic integrity and plagiarism.
- Data privacy and security issues.
- Lack of adequate training among faculty members.

Statement of the Problem

The rapid advancement of Artificial Intelligence has transformed educational practices worldwide. Faculty members are increasingly utilizing AI tools for lesson planning, content creation, research support, assessment, and student interaction. However, concerns related to accuracy, ethical use, data privacy, and dependence on technology continue to influence the adoption of AI tools. Therefore, it is essential to understand how faculty members perceive and utilize AI technologies in higher education and to identify the factors that affect their effective implementation.

Analysis and Interpretation

1. Gender of Respondents

Gender	No. of Respondents	Percentage
Male	38	44
Female	48	56
Total	86	100

Source of data:

The table shows that 56% of the respondents are female faculty members, while 44% are male faculty

members. This indicates that female faculty members constitute the majority of the respondents.

2. Geographical Area of Respondents

Geographical Area	No. of Respondents	Percentage
Urban	47	55
Semi Urban	23	27
Rural	16	18
Total	86	100

Source Data:

The table reveals that 55% of the respondents belong to urban areas, followed by 27% from semi-urban areas and 18% from rural areas. This indicates that the majority of respondents are from urban institutions.

3.Type of AI Tool Used

AI Tool	No. of Respondents	Percentage
ChatGPT	28	33
Gemini	18	21
Grammarly AI	14	16
Microsoft Copilot	10	12
Canva AI	9	10
Notebook LM	7	2
	86	100

Source data:

The table indicates that ChatGPT is the most frequently used AI tool among faculty members, accounting for 33% of the respondents. Gemini (21%) and Grammarly AI (16%) are also widely used for academic and research purposes. Canva AI (10%) assists faculty members in designing presentations and educational materials, while Microsoft Copilot (12%) and NotebookLM (8%) support productivity and research-related activities. The findings suggest that faculty members utilize a variety of AI tools to enhance teaching, research, and content development.

4.Contribution of AI Tools to Student Learning Outcomes

Knowledge Development Level	No. of Respondents	Percentage
Highly Improved	25	29
Improved	37	43
Moderate	15	17
Low	06	07
No Improvement	03	04
	86	100

Source Data:

The table shows that 43% of the respondents believe AI tools improve students' knowledge levels, while 29% feel that AI tools highly improve learning outcomes. This demonstrates a positive impact of AI tools on student learning.

5.Satisfaction Level of Faculty Members

Satisfaction Level	No. of Respondents	Percentage
Highly Satisfied	22	26
Satisfied	38	44
Neutral	15	17
Dissatisfied	08	09
Highly Dissatisfied	03	04
	86	100

Source of data:

The table indicates that 44% of the respondents are satisfied and 26% are highly satisfied with AI tools. This suggests that the majority of faculty members have a positive perception of AI technologies in higher education.

6.Frequency of AI Tool Usage

Usage Frequency	No. of Respondents	Percentage
Daily	30	35
Weekly	28	33
Monthly	18	21
Rarely	10	11
Total	86	100

Source data:

The table shows that 35% of the respondents use AI tools daily, while 33% use them weekly. This indicates that AI tools have become an integral part of academic activities for a majority of faculty members.

7.Primary Use of AI Tools Among Faculty Members

Purpose	No. of Respondents	Percentage
Teaching Material Preparation	26	30
Research and Writing	22	26
Student Assessment	16	19
Administrative Work	12	14
Content Creation	10	11
	86	100

Source of data:

The table reveals that 30% of faculty members use AI tools primarily for preparing teaching materials, followed by 26% for research and academic writing. This highlights the growing role of AI in supporting educational and research activities.

8. Barriers to the Adoption of AI Tools Among Faculty Members

Opinion	No. of Respondents	Percentage
Strongly Agree	24	28
Agree	38	44
Neutral	14	16
Disagree	07	08
Strongly Disagree	03	04
Total	86	100

Source data

The table indicates that 44% of respondents agree and 28% strongly agree that AI tools improve teaching effectiveness. This demonstrates a positive perception of AI technology among faculty members.

9.Problems Associated with AI Tool Usage

Problems	No. of Respondents	Percentage
Accuracy and Reliability Issues	24	28
Lack of Training and Technical Skills	20	23
Data Privacy and Security Concerns	16	19

Internet and Technical Problems	14	16
Overdependence on AI Tools	12	14
Total	86	100

Source of Data:

The table shows that 28% of the respondents consider accuracy and reliability issues as the major problem associated with the use of AI tools. About 23% of the faculty members reported a lack of training and technical skills as a significant challenge, while 19% expressed concerns regarding data privacy and security. Internet and technical problems account for 16% of the responses, and 14% of the respondents believe that excessive dependence on AI tools is a concern. The findings indicate that although AI tools offer several benefits, addressing these challenges is essential for their effective and responsible use in higher education institutions.

Garrett Ranking Analysis of Benefits of AI Tools

Benefits of AI Tools	Garrett Mean Score	Rank
Enhancing Teaching Effectiveness	68.45	I
Improving Research Productivity	62.30	II
Supporting Student Learning	58.20	III
Saving Time in Academic Tasks	54.15	IV
Assisting in Content Creation	49.80	V

Source of data

The Garrett Ranking analysis reveals that enhancing teaching effectiveness is the most important benefit perceived by faculty members, securing the first rank with a mean score of 68.45. Improving research productivity ranks second, indicating that AI tools play a significant role in supporting academic research activities. Supporting student learning occupies the third position, followed by saving time in academic tasks. Assisting in content creation receives the fifth rank. The findings suggest that faculty members primarily value AI tools for their contribution to teaching quality and research performance in higher education institutions.

Finding:

- The majority of the respondents 56% are female faculty members, while 44% are male faculty members.

- Most of the respondents 55% belong to urban areas, indicating higher AI adoption in urban institutions.
- ChatGPT is the most widely used AI tool among faculty members, followed by Gemini and Grammarly AI.
- A significant number of respondents believe that AI tools positively contribute to student learning outcomes and knowledge development.
- Most faculty members are satisfied with the use of AI tools in academic activities.
- AI tools are frequently used, with a majority of respondents utilizing them on a daily or weekly basis.
- Teaching material preparation and research activities are the primary purposes for using AI tools.
- Faculty members generally agree that AI tools improve teaching effectiveness and academic productivity.
- Accuracy issues, lack of training, and data privacy concerns are the major challenges associated with AI tool usage.
- The Garrett Ranking analysis indicates that faculty members consider enhancing teaching effectiveness as the most significant benefit of AI tools, followed by improving research productivity and supporting student learning.

Suggestions:

- Higher education institutions should organize regular training programs to improve faculty members' AI skills and knowledge.
- Clear guidelines and policies should be developed for the ethical and responsible use of AI tools in education.
- Faculty members should be encouraged to verify AI-generated information before using it for teaching and research purposes.
- Institutions should provide adequate technical infrastructure and internet facilities to support effective AI adoption.
- Awareness programs should be conducted to address concerns related to data privacy and security.
- AI tools should be integrated into teaching and learning practices in a balanced manner to avoid excessive dependence on technology.
- Educational institutions should encourage the use of advanced AI tools for enhancing student engagement, research quality, and academic innovation.

Conclusion:

The study concludes that Artificial Intelligence has become a transformative force in higher education, significantly influencing the way faculty members teach, conduct research, develop academic content, and engage with students. The increasing adoption of AI tools such as ChatGPT, Gemini, Grammarly AI, Microsoft Copilot, Canva AI, and NotebookLM reflects the growing acceptance of technology-driven solutions in academic environments. Faculty members recognize the value of these tools in enhancing productivity, improving teaching effectiveness, supporting research activities, and fostering better learning outcomes for students. While AI offers numerous benefits, challenges related to accuracy, technical skills, data privacy, and responsible usage need to be addressed through proper training and institutional support. Overall, the study highlights that AI has become an essential resource in higher education and, when used effectively and ethically, has the potential to promote innovation, academic excellence, and student-centered learning while preparing educational institutions for a technology-driven future.

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