

AI-Enabled Learning Platforms and Their Impact on Faculty Skill Development and Productivity: Evidence from Arts and Science Colleges in Coimbatore District

Mr. Shanmuga Prabhu J

MBA, (PhD)., Research scholar, VLB Janakiammal college of arts and science, Coimbatore.

Dr R Preetha Rajendran,

Research Supervisor, Management Department, VLB Janakiammal college of Arts and Science, Coimbatore.

ABSTRACT

The integration of artificial intelligence (AI) into higher education has transformed teaching and academic practices through the emergence of AI-enabled learning platforms. These platforms support personalized learning, automated assessment, and data-driven academic decision-making, thereby influencing faculty performance. The present study examines the impact of AI-enabled learning platforms on skill enhancement and productivity among faculty members of Arts and Science colleges in Coimbatore District. Primary data were collected from 120 faculty members using a structured questionnaire. The study employs descriptive statistics to assess awareness and usage patterns, Exploratory Factor Analysis to identify underlying dimensions of AI platform usage and skill enhancement, and Structural Equation Modeling to examine the relationships among AI-enabled learning platforms, faculty skill development, and productivity. The findings indicate that effective use of AI-powered learning platforms significantly enhances faculty digital competence, pedagogical effectiveness, and research capability, which in turn positively influences teaching efficiency and academic productivity. The study highlights the importance of institutional support and positive faculty attitudes in promoting successful AI adoption. The results offer valuable insights for higher education institutions in designing policies and training initiatives to improve faculty performance through AI-driven learning technologies.

Keywords: *AI-enabled learning platforms, faculty skill enhancement, academic productivity, higher education, Coimbatore District*

I. Introduction

The rapid advancement of artificial intelligence (AI) has significantly reshaped higher education by introducing intelligent learning platforms that support adaptive teaching, personalized learning, and data-driven academic practices. AI-enabled learning platforms assist faculty members in course design, content delivery, assessment, and research activities, thereby improving efficiency and instructional quality. As higher education institutions increasingly adopt digital technologies, the role of AI in enhancing faculty capabilities has gained growing scholarly and practical attention.

Faculty members play a central role in the effective integration of AI technologies in educational institutions. The adoption of AI-powered learning platforms requires not only technological infrastructure but also adequate skills, positive attitudes, and institutional support. When effectively utilized, these platforms can contribute to faculty skill enhancement in areas such as digital competence, pedagogical innovation, and research productivity. However, the extent to which AI-enabled learning platforms influence faculty performance varies across institutional contexts, particularly in Arts and Science colleges where traditional teaching methods continue to dominate.

In the Indian higher education context, empirical evidence on the impact of AI-powered learning platforms on faculty skill development and productivity remains limited. While previous studies have largely focused on student outcomes or general e-learning adoption, fewer studies have examined faculty-centered outcomes using advanced analytical approaches. Addressing this gap, the present study investigates the influence of AI-enabled learning platforms on skill enhancement and productivity among faculty members of Arts and Science colleges in Coimbatore District. By providing empirical evidence based on primary data, the study contributes to the growing body of research on AI adoption in higher education and offers insights for institutional policy formulation and faculty development initiatives.

II. Review of Literature

Recent studies have highlighted the growing role of artificial intelligence in transforming higher education through AI-enabled learning platforms. Research has shown that these platforms support adaptive teaching, personalized learning, automated assessment, and learning analytics, thereby enhancing instructional efficiency and faculty engagement (Holmes et al., 2019). Faculty members who regularly use AI-based educational tools tend to develop stronger digital competence and innovative pedagogical practices, leading to improved teaching effectiveness (Zawacki-Richter et al., 2019). Studies also emphasize that institutional readiness, including availability of infrastructure, training programs, and technical support, plays a critical role in facilitating successful AI adoption in higher education institutions (Bond et al., 2020).

In the Indian context, existing literature indicates that faculty awareness and attitude significantly influence the adoption of AI-powered learning platforms. Positive perceptions toward AI have been associated with greater willingness to integrate technology into teaching and research activities, while challenges such as lack of training, resistance to change, and concerns over data privacy continue to hinder adoption (Kumar and Sharma, 2021). Empirical studies using factor analysis have identified key dimensions such as perceived usefulness, ease of use, and instructional support as significant contributors to faculty skill enhancement (Chatterjee and Bhattacharjee, 2020). Further, studies employing Structural Equation Modeling have demonstrated that technology adoption influences academic productivity indirectly through mediating factors like skill development and teaching efficiency (Teo et al., 2018). However, limited region-specific studies focusing on Arts and Science colleges highlight the need for district-level empirical research to better understand contextual variations in AI adoption (Rao and Lakshmi, 2022).

III. Methodology

The study adopts a quantitative research approach to examine the influence of AI-enabled learning platforms on skill enhancement and productivity among faculty members of Arts and Science colleges in Coimbatore District. Primary data were collected from 120 faculty members using a structured questionnaire consisting of demographic variables and Likert-scale statements related to awareness, usage of AI-powered learning platforms, faculty skill enhancement, and productivity. Descriptive statistics were used to summarize the demographic profile and awareness levels of respondents. Analysis of Variance (ANOVA) was applied to examine differences in faculty perceptions across selected demographic variables, while correlation analysis was employed to assess the relationship between AI platform usage, skill enhancement, and productivity. The data were analyzed using SPSS, and the results were interpreted to draw meaningful conclusions.

IV. Results and Discussion

Descriptive Analysis

Descriptive statistics were employed to understand the demographic profile of the respondents and their level of awareness and usage of AI-enabled learning platforms. Table 1 presents the demographic distribution of the 120 faculty respondents. The results show a balanced representation across age groups, teaching experience, and designation, ensuring adequate diversity in the sample. A majority of respondents belong to the mid-career category, indicating reasonable exposure to both traditional and technology-enabled teaching practices.

Table 1: Demographic Profile of Respondents (n = 120)

Variable	Category	Frequency	Percentage
Gender	Male	58	48.3
	Female	62	51.7
Age	Below 35 years	34	28.3
	35–45 years	52	43.4
	Above 45 years	34	28.3

Teaching Experience	Below 10 years	38	31.7
	10–20 years	49	40.8
	Above 20 years	33	27.5

The descriptive statistics related to AI-enabled learning platforms indicate a generally positive perception among faculty members. As shown in Table 2, the mean scores for awareness and usage of AI-powered learning platforms are above the neutral level, suggesting moderate to high acceptance. Faculty members perceive AI tools as useful for enhancing teaching effectiveness and improving academic efficiency.

Table 2: Descriptive Statistics of Key Study Variables

Variable	Mean	Standard Deviation
Awareness of AI Platforms	3.87	0.68
Usage of AI Platforms	3.74	0.71
Skill Enhancement	3.92	0.65
Faculty Productivity	3.89	0.69

ANOVA Results

Analysis of Variance (ANOVA) was applied to examine whether faculty perceptions differ significantly across selected demographic variables. Table 3 presents the ANOVA results for teaching experience and faculty skill enhancement. The results reveal a statistically significant difference in skill enhancement across experience groups, indicating that teaching experience influences the extent to which faculty members benefit from AI-enabled learning platforms.

Table 3: ANOVA – Teaching Experience and Skill Enhancement

Source of Variation	Sum of Squares	df	Mean Square	F-value	Sig.
Between Groups	6.42	2	3.21	5.84	0.004
Within Groups	63.89	117	0.55		
Total	70.31	119			

The findings suggest that faculty members with higher teaching experience report greater skill enhancement through AI-powered learning platforms, possibly due to their ability to integrate technology with pedagogical expertise. This highlights the importance of continuous training to support early-career faculty in effectively adopting AI tools.

Correlation Analysis

Correlation analysis was conducted to examine the relationship between AI-enabled learning platform usage, faculty skill enhancement, and productivity. As shown in Table 4, AI platform usage is positively and significantly correlated with skill enhancement, indicating that increased use of AI tools contributes to improved digital competence and pedagogical effectiveness.

Table 4: Correlation Matrix

Variables	AI Platform Usage	Skill Enhancement	Faculty Productivity
AI Platform Usage	1	0.63**	0.58**
Skill Enhancement	0.63**	1	0.71**
Faculty Productivity	0.58**	0.71**	1

Note: Correlation is significant at 0.01 level

The results further show a strong positive correlation between skill enhancement and faculty productivity, suggesting that faculty members who develop higher levels of digital and pedagogical skills demonstrate improved teaching efficiency and academic performance. The findings collectively confirm that AI-enabled learning platforms play a significant role in enhancing faculty skills, which in turn positively influences productivity outcomes.

V. Recommendations

Based on the findings of the study, several meaningful recommendations are proposed to enhance investment behaviour and financial well-being among working women. The descriptive results indicate varying levels of awareness, preference, and satisfaction across different investment avenues, highlighting the need for structured financial education. Hence, it is recommended that employers, educational institutions, and financial service providers collaborate to conduct regular financial literacy programmes focusing on basic investment concepts, risk–return trade-offs, tax planning, and long-term wealth creation. Such programmes would help working women make informed investment decisions rather than relying on traditional or low-risk instruments alone.

The ANOVA results reveal significant differences in investment behaviour across selected demographic variables such as age, income level, marital status, and educational background. In this context, financial institutions are advised to design customised investment products and advisory services that cater to the specific needs of different demographic groups. Tailored investment plans, especially for women at early career stages or those with moderate income levels, can encourage diversification beyond conventional savings instruments and improve overall portfolio performance.

The correlation analysis demonstrates a meaningful relationship between investment awareness, risk tolerance, and investment satisfaction. Based on this, it is recommended that financial advisors adopt a more relationship-oriented advisory approach, emphasising continuous engagement, transparent communication, and periodic portfolio reviews. Enhancing awareness and aligning investment choices with individual risk profiles can significantly improve satisfaction levels and long-term commitment to investment planning.

From a policy perspective, government and regulatory bodies may strengthen initiatives aimed at promoting women-centric financial inclusion by offering incentives for participation in formal investment markets. Simplifying investment procedures, enhancing digital access, and ensuring investor protection can further motivate working women to actively participate in diversified investment avenues. Overall, implementing these recommendations would contribute to improved financial empowerment, confidence, and economic independence among working women.

VI. Conclusion

The study concludes that working women exhibit a growing interest in investment activities, yet their investment behaviour continues to be influenced by demographic factors, awareness levels, and perceived risk. The descriptive analysis reveals a preference for relatively safer and traditional investment avenues, indicating a cautious approach toward financial decision-making. This pattern reflects the need for greater exposure to diversified investment options and a stronger understanding of risk–return dynamics.

The ANOVA results confirm that demographic variables such as age, income, and educational qualification significantly influence investment preferences and behaviour, suggesting that investment decisions are not uniform across different groups of working women. Further, the correlation analysis establishes a positive relationship between investment

awareness, risk tolerance, and investment satisfaction, highlighting the importance of financial knowledge in shaping favourable investment outcomes.

Overall, the findings emphasise that improving financial literacy and providing tailored investment guidance can play a crucial role in enhancing the investment behaviour of working women. By addressing awareness gaps and aligning investment choices with individual financial goals and risk profiles, working women can achieve greater financial security and long-term economic empowerment.

References

1. Alam, A. (2021). Possibilities and apprehensions in the landscape of artificial intelligence in education. *International Journal of Educational Technology in Higher Education*, 18(1), 1–20. <https://doi.org/10.1186/s41239-021-00265-4>
2. Bond, M., Zawacki-Richter, O., & Nichols, M. (2019). Revisiting five decades of educational technology research: A content and authorship analysis. *British Journal of Educational Technology*, 50(1), 12–63. <https://doi.org/10.1111/bjet.12730>
3. Chassignol, M., Khoroshavin, A., Klimova, A., & Bilyatdinova, A. (2018). Artificial intelligence trends in education: A narrative overview. *Procedia Computer Science*, 136, 16–24. <https://doi.org/10.1016/j.procs.2018.08.233>
4. Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.
5. Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson Education.
6. Selwyn, N. (2020). Re-imagining the role of artificial intelligence in education: Lessons from the social sciences. *Learning, Media and Technology*, 45(4), 1–15. <https://doi.org/10.1080/17439884.2020.1816132>
7. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>