ROLE OF RESEARCH CONFERENCES & THE USE OF AI TOOLS IN THE PROFESSIONAL DEVELOPMENT OF HIGHER EDUCATION TEACHING FACULTIES

*** Asst. Prof. Swapnil Kharkar**

* *Faculty, Department of Commerce and Management, ** HOD, Department of Business Communication, Keraleeya Samajam's (regd.) Dombivli's Model College (Empowered Autonomous) Khamabalpada, Dombivli*

Abstract:

This study analyzes the impact of research conference participation and the use of Artificial Intelligence (AI) tools on the professional development of higher education teaching faculties. Primary data were collected from 35 faculty members using a structured questionnaire and analyzed through Spearman's Rank Correlation Coefficient. The results indicate a weak and statistically insignificant relationship between conference participation and professional development, while a strong and significant positive relationship was found between AI tool usage and professional development. The study concludes that AI tools play a more influential role than research conferences in enhancing faculty professional development.

Key Words: *Professional Development, Higher Education Faculty, Research Conferences, Artificial Intelligence Tools, AI in Academia, Faculty Development, Teaching and Research Practices*

Introduction:

In today's knowledge-based academic environment, the professional development of higher education teaching faculties has become very important. Continuous changes in teaching methods, technology, research trends, and global academic interaction require teachers to keep learning and improving their skills. In this situation, research conferences and Artificial Intelligence (AI) tools have emerged as important means for academic growth, sharing knowledge, and improving professional abilities among higher education faculty members.

Research conferences have always played an important role in the academic field. They provide a formal platform for teachers and researchers to present their research work, share ideas, and take part in academic discussions. Conferences also allow participants to receive useful feedback from experts and peers. Attending research conferences helps faculty members stay updated with recent developments in their subject areas, improve research exposure, and build academic networks at national and international levels. These activities help in developing communication skills, research thinking, and overall professional confidence.

In recent years, the use of Artificial Intelligence tools in academic and research activities has changed the way teaching faculties work. AI-based tools such as academic search engines, reference management software, plagiarism checking tools, data analysis software, and content support tools have increased the speed and efficiency of research work. These tools help faculty members in reviewing literature, analyzing data, preparing research papers, and developing conference presentations, thereby saving time and improving research quality.

AI tools play an important role in the context of research conferences by assisting faculty members in selecting suitable conferences, identifying relevant themes, preparing research papers, and designing presentations. AI-supported online and hybrid

conferences have also improved access to global academic events by reducing constraints related to distance, time, and travel costs. However, variations in awareness, technical skills, institutional support, and ethical understanding influence the effective use of these resources. Therefore, this study examines the role of research conferences and AI tools in supporting the professional development of higher education teaching faculties.

Research Methodology:

Population and Sample Size:

The **population** of the study consists of respondents who are directly relevant to the research topic and possess the necessary exposure or experience related to the subject under study. Population in this study is **"Higher Education Teaching Faculties"**. Since it is not practically possible to collect data from the entire population due to constraints of time and resources, a sample was selected for the study.

The **sample size** for the present research consists of **the primary data count as specified by the researcher**. The sample size for this Research is **35**. The selected sample is considered adequate to represent the population and to draw meaningful conclusions. Efforts were made to include respondents from diverse backgrounds to enhance the reliability and validity of the findings.

Sampling Technique:

The study employs a **non-probability sampling technique**, specifically **convenience sampling**. Under this method, respondents were selected based on their availability and willingness to participate in the survey. Convenience sampling is widely used in social science research due to its practicality and ease of data collection. This technique is suitable for the present study as it allows the researcher to gather data efficiently within the given time frame while maintaining sufficient representation of the target population.

Data Collection Tools:

The study is based on **primary data**, which was collected using a structured questionnaire administered through **Google Forms**. The questionnaire was designed to capture respondents' opinions, perceptions, and experiences related to the research variables.

Google Forms was chosen as the data collection tool due to its cost-effectiveness, ease of distribution, and ability to reach respondents quickly. The questionnaire consisted mainly of close-ended questions, including Likert-scale and dichotomous (Yes/No) questions, which facilitated quantitative analysis. The online mode also ensured convenience for respondents and reduced manual errors in data entry.

Statistical Techniques Used:

The collected data was processed, classified, and analyzed using appropriate statistical tools. To test the relationship between variables and examine the hypotheses, **Spearman's Rank Correlation Coefficient** was used. The responses were coded and analyzed using **MS Excel** for descriptive analysis

Spearman's rank correlation is a non-parametric statistical technique that measures the degree and direction of association between two ranked variables. It is particularly suitable for ordinal data and situations where the assumptions of normality are not met. The technique helped in determining whether a significant relationship exists between the selected variables of the study.

Research Objectives:

1. To examine the impact of participation in research conferences on the professional development of higher education teaching faculties.

2. To assess the extent to which Artificial Intelligence (AI) tools are used by higher education teaching faculties for academic and professional purposes.

3. To analyze the relationship between the use of AI tools and the professional development of higher education teaching faculties.

4. To identify key areas of professional development (such as teaching effectiveness, research skills, and academic productivity) influenced by conference participation and AI tool usage.

5. To understand faculty perceptions toward the role of research conferences and AI tools in enhancing their professional growth.

Limitations of the Study:

Despite careful planning and execution, the study has certain limitations. The findings are based on a limited sample size and may not be fully generalizable to the entire population. The use of convenience sampling may lead to respondent bias. Since data was collected through self-reported questionnaires, responses may be influenced by personal opinions or social desirability. Additionally, the study relies on a single statistical technique, which may restrict deeper analysis of the data.

Hypothesis :

H_1 = Participation in research conferences has a significant positive impact on the professional development of higher education teaching faculties.

H_2 = The use of Artificial Intelligence (AI) tools significantly enhances the professional development of higher education teaching faculties.

Literature Review:

Artificial Intelligence (AI) tools have increasingly been recognized for their potential to enhance teaching practices and faculty behavior in higher education. Research indicates that AI tools positively impact course design, teaching methodology, and student motivation, while highlighting the need for institutional policies and further studies to optimize their role in professional development (Strazda et al., 2023). Similarly, AI tools integrated through international conferences, webinars, and workshops have been shown to promote high participant engagement and readiness to adopt innovative pedagogical practices, thereby supporting the professional growth of teaching staff (Kovalenko et al., 2022). Furthermore, AI has been found to facilitate university teachers' tripartite roles in teaching, research, and community service by making tasks more efficient; however, responsible use is emphasized to prevent over-reliance and intellectual stagnation (Fasanmi & Seyama, 2021). Systematic reviews of existing literature further reveal an imbalance in research focus, where AI's application in teaching receives greater attention than its contribution to professional development, underscoring the need for future research to address both technological and ethical challenges in faculty development (Tan et al., 2024).

Alongside AI tools, traditional academic platforms such as scientific conferences continue to play a significant role in faculty professional development. Studies demonstrate that participation in scientific conferences contributes to the development of professional and pedagogical competencies, while also enhancing the university's image and reputation (Isaeva, 2019). Moreover, strategic professional development initiatives for adjunct faculty, including engagement in scholarly approaches to teaching and learning through flexible communities of practice, have been shown to enhance research-informed pedagogical methods and overall faculty effectiveness (Webb et al., 2021). Taken together, these studies indicate that both modern technological tools and traditional academic platforms have important, yet often separately studied, roles in the professional development of higher education faculty, highlighting a gap in research that considers their combined impact.

Research Gap:

The review of existing literature indicates that studies on Artificial Intelligence (AI) tools primarily focus on their role in enhancing teaching practices, research efficiency, and e-learning environments, while research on academic conferences largely emphasizes their contribution to the professional and pedagogical

development of university teachers. However, most of these studies examine AI tools and research conferences as independent factors, with limited scholarly attention given to their combined influence on the professional development of higher education teaching faculties. Additionally, there is a noticeable lack of empirical studies that examine faculty perceptions, usage patterns, benefits, and challenges associated with both AI tools and research conference participation within a unified analytical framework, particularly in the higher education teaching context.

Problem Statement:

In the contemporary higher education environment, teaching faculties are increasingly engaging with both
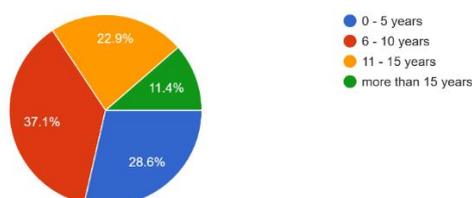
Data Analysis & Interpretation:

traditional academic platforms such as research conferences and modern technological tools including Artificial Intelligence (AI) to enhance their professional competencies. Despite this growing engagement, there remains insufficient clarity regarding the extent to which participation in research conferences and the use of AI tools individually and collectively contribute to the professional development of higher education teaching faculties. Understanding faculty perceptions, patterns of use, and the perceived benefits and challenges associated with these platforms is essential to assess their actual impact on professional development, thereby necessitating an empirical investigation in this area.

Q.2 What is your current designation?
35 responses

- Assistant Professor
- Assosiate Professor
- Professor
- Visiting / Ad-hoc faculty

82.9%   8.6%
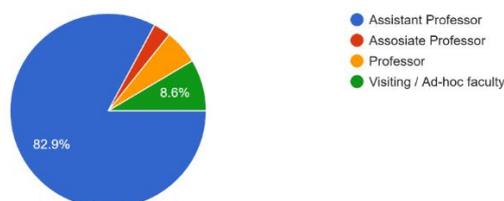
Q.3 How many years of teaching experience do you have?
35 responses

- 0 - 5 years
- 6 - 10 years
- 11 - 15 years
- more than 15 years

22.9%   11.4%   37.1%   28.6%

Source: Primary data collected by the researcher

The respondent group reflects a strong representation of female faculty members along with a balanced spread of teaching experience. Most participants fall within the early to mid-career stage, indicating meaningful exposure to academic practices, while a smaller proportion represents senior faculty with extensive experience. This mix provides a diverse yet relevant perspective for the analysis.

For the purpose of statistical analysis, the responses collected through the Google Form were converted into numerical values. The Likert-scale questions were coded by assigning scores from 1 to 5, where 1 represented the lowest level of agreement and 5 represented the highest level of agreement. Dichotomous questions were coded numerically to ensure

OPEN ACCESS　　　　　　　　　　　　　　　　**Original Research Article**

uniformity in data analysis. This conversion enabled the ranking of responses and facilitated the application of Spearman's Rank Correlation Coefficient to examine the relationship between the selected variables.

For example, "strongly disagree" converted into 1,"disagree" into 2, "neutral" into 3,"agree" into 4, & "strongly agree" into 5. and so on to similar basis. Also in the dichotomous questions "No" is converted into 1 and "Yes" into 2.

1. For the **first hypothesis**, two variables are taken into consideration- Research Conference Participation (Independent Variable) & Professional Development (Dependent Variable). The data skewness shows it is a right skew data, not a normally distributed data. Therefore for the purpose of calculation Correlation Coefficient, "Spearman's Rank Correlation Coefficient" is selected.

   The independent variable, research conference participation, was measured using relevant questionnaire items, while the dependent variable, professional development, was assessed through items focusing on faculty growth and competencies.

Average of IVs	Average of DVs	RANK OF IVs	RANK OF DVs
2.5	3.33	6.5	24.5
2.5	4.33	6.5	8
2	2.33	19	34
2	2.00	19	35
1	3.33	34.5	24.5
3.5	3.33	2	24.5
3.5	4.33	2	8
1.5	4.00	31	13.5
1	3.00	34.5	30.5
3.5	4.67	2	2.5
2	3.33	19	24.5
2.5	4.00	6.5	13.5
2	4.33	19	8
2	3.33	19	24.5
1.5	3.33	31	24.5
2	2.67	19	32.5
2.5	3.67	6.5	17.5
1.5	4.33	31	8
2	4.67	19	2.5
2	3.00	19	30.5
2	3.67	19	17.5
2	3.33	19	24.5
2	2.67	19	32.5
2	4.67	19	2.5
2	4.67	19	2.5
2.5	4.33	6.5	8
2	3.67	19	17.5
2	4.33	19	8
2.5	3.67	6.5	17.5
1.5	3.33	31	24.5
1.5	4.33	31	8

Original Research Article

Average of IVs	Average of DVs	RANK OF IVs	RANK OF DVs
2	3.33	19	24.5
2	4.00	19	13.5
2	3.33	19	24.5
2	4.00	19	13.5

Source: Author's calculation based on survey data

$$p = 1 - \frac{6 \sum d^2_i}{n(n^2-1)}$$

$p = 0.224$

Interpretation:

Spearman's rank correlation analysis revealed a weak positive relationship between participation in research conferences and professional development of higher education faculty ($\rho = 0.224$). However, the relationship was not statistically significant at the 5% level.

Hence, the hypothesis that participation in research conferences has a significant positive impact on professional development is **not supported**.

2. For the **second hypothesis**, two variables are taken into consideration- Use of AI Tools (Independent Variable) & Professional Development of Higher Education Teaching Faculties (Dependent Variable). The data skewness shows it is a right skew data, not a normally distributed data. That's why for the purpose of calculation Correlation Coefficient, "Spearman's Rank Correlation Coefficient" is selected.

The independent variable, Use of AI tools, was measured using relevant questionnaire items, while the dependent variable, professional development, was assessed through items focusing on faculty growth and competencies.

Average of IVs	Average of DVs	RANK OF IVs	RANK OF DVs
3	4.4	18.5	9.5
3	5	18.5	2
2.5	3	31.5	32.5
3	2.8	18.5	34.5
3.5	4.2	4.5	13
2.5	3.6	31.5	25
3.5	3.6	4.5	25
2.5	3.8	31.5	21
2.5	3	31.5	32.5
3.5	5	4.5	2
2.5	3.4	31.5	28
3	4.2	18.5	13
3	4.2	18.5	13
3	4	18.5	17.5

Average of IVs	Average of DVs	RANK OF IVs	RANK OF DVs
2	3.2	35	30
3	3.2	18.5	30
3	4.2	18.5	13
3	4.2	18.5	13
3.5	4.6	4.5	7.5
3	3.8	18.5	21
2.5	3.6	31.5	25
3.5	4.8	4.5	5
3	3.6	18.5	25
3	4.8	18.5	5
3.5	4.6	4.5	7.5
3.5	4.8	4.5	5
3	3.6	18.5	25
3	3.8	18.5	21
3	4.4	18.5	9.5
3	2.8	18.5	34.5
3.5	5	4.5	2
3	4	18.5	17.5
3	4	18.5	17.5
3	3.2	18.5	30
3	4	18.5	17.5

Source: Author's calculation based on survey data

$$p = 1 - \frac{6 \sum d_i^2}{n(n^2-1)}$$

p = 0.632

Interpretation:

Correlation analysis revealed a strong positive relationship between the use of AI tools and professional development of higher education teaching faculties (ρ = 0.632), which was statistically significant at the 5% level. Hence, the hypothesis that the use of AI tools significantly enhances professional development is **supported**.

Conclusion:

The present research was conducted to analyze the influence of research conference participation and the use of Artificial Intelligence (AI) tools on the professional development of higher education teaching faculties. A descriptive and analytical research design was adopted, and primary data was collected from 35 faculty members using a structured questionnaire through Google Forms. The data was analyzed using Spearman's Rank Correlation Coefficient to test the proposed hypotheses.

The results of the study indicate that participation in research conferences exhibits a **positive but weak association** with the professional development of faculty members. Moreover, this relationship was found to be **statistically insignificant** at the 5% level.

OPEN ACCESS **Original Research Article**

This suggests that although research conferences provide academic exposure and opportunities for interaction, their direct contribution to professional development may be limited in the context of this study. Consequently, the hypothesis proposing a significant positive impact of conference participation on professional development is **not accepted**.

In contrast, the findings demonstrate a **strong and statistically significant positive relationship** between the use of AI tools and the professional development of higher education teaching faculties. The results clearly indicate that AI tools contribute substantially to improving teaching practices, enhancing research efficiency, and supporting academic growth. Accordingly, the hypothesis stating that the use of AI tools significantly enhances professional development is **accepted**.

In conclusion, the study highlights that while conventional professional development avenues such as research conferences continue to hold importance, **AI-enabled tools have a more pronounced and measurable impact** on faculty development. The growing reliance on AI in academic activities reflects a transition toward technology-driven professional practices, emphasizing the need for higher education institutions to actively support and integrate AI-based solutions for faculty advancement.

Suggestions:

Based on the findings of the study, the following suggestions are offered:

1. **Institutions should promote structured AI training programs** for faculty members to enhance their teaching, research, and academic productivity.

2. **Research conferences should be redesigned** to include more practical workshops, hands-on sessions, and technology-focused discussions to increase their impact on professional development.

3. Higher education institutions should **encourage the ethical and effective use of AI tools** by developing clear guidelines and institutional policies.

4. Future research may be conducted with a **larger sample size and advanced statistical techniques** to gain deeper insights into the combined impact of conferences and AI tools on faculty development.

References:

1. *Kovalenko, V., Marienko, M., Shyshkina, M., & Iatsyshyn, A. (2025).* Using artificial intelligence tools for the professional development of teaching staff. *Educological Discourse, 49(2), 24–34.*

2. *Strazda, A., et al. (2023).* The role of AI tools in improving practices in e-learning environment: A pilot study. *TEM Journal. Volume 14, Issue 4, pages 2972-2983*

3. *Fasanmi, S., & Seyama, S. (2021).* Artificial intelligence and the tripartite role of university teachers. *Studies in Learning and Teaching (SiLeT) , Vol. 6, No. 1, August 2025 Page 177-185*

4. *Tan, X., et al. (2024).* Artificial intelligence in teaching and teacher professional development: A systematic review. *Computers & Education: Artificial Intelligence, Volume 8, June 2025*

5. *Isaeva, T. E. (2025).* Scientific conference on higher education as an effective tool for developing professional and pedagogical competences of university teachers. *Siberian Pedagogical Journal*

6. *Webb, A. S., Wong, T. J., & Hubball, H. (2013).* Professional development for adjunct teaching faculty in a research-intensive university: Engagement in scholarly approaches to teaching and learning. *International Journal of Teaching and Learning in Higher Education, 25(2), 231–238.*