



## **Faculty Development Programme**

*on*

**Multi-Criteria Decision Making with Machine Learning  
Technique in Management Research (MDML-TiMR-2024)**

**09<sup>th</sup> Feb –15<sup>th</sup> Feb 2024**

*Organizing by:*

**Department of Management Studies  
ABV-Indian Institute of Information Technology and Management  
Gwalior**

**Programme Coordinators**

**Dr Vinay Singh, Dr Manoj Kumar Dash, Prof Anurag Srivastava**

## About the Programme

In the rapidly evolving landscape of management research, staying abreast of cutting-edge methodologies is imperative for researchers and practitioners. Recognizing this need, our institution is organizing a comprehensive one-week Faculty Development Program (FDP) on “Multi-Criteria Decision Making with Machine Learning Techniques in Management Research.” This program aims to equip participants with advanced skills and knowledge to enhance their research capabilities in the management field.

## Objectives

The primary objective of this FDP is to provide participants with a deeper understanding of Multi-Criteria Decision Making (MCDM) and its integration with state-of-the-art Machine Learning (ML) techniques. By the end of the program, participants will be adept at applying these methodologies to address complex decision-making challenges in their research projects.

The programme is designed to impart theoretical and hands-on exposure to the following:

- To facilitate the identification of research problems and the development of research frameworks in the context of Management Studies.
- To provide an in-depth understanding of selective Multi-Criteria Decision-Making (MCDM) and machine learning techniques and their applications in the research process.
- To equip participants with practical experience through hands-on exercises and case studies that include:
  - ◇ MCDM tools include the Analytical Network Process (ANP), Total Interpretive Structural Modeling, ELECTRE, VIKOR, PROMETEE, SAW, and ABC.
  - ◇ Machine Learning methods Decision Tree, Neural Network (NN), Support Vector Machine (SVM), Long-Short Term Memory (LSTM) and Random- Forest.
- To enhance participants' analytical and decision research ability with academic writing skills, encompassing reference management and research paper writing.

## Program Highlights

The One-Week Faculty Development Programme will comprise a wide array of topics and activities, enabling participants to broaden their horizons and deepen their expertise:

### **Part 1: Research Problem Identification and Decision-Research Framework**

- Identifying research gaps and problem areas in Management Studies
- Developing robust research frameworks and objectives
- Incorporating relevant theories and models
- Introduction to Multi-Criteria Decision-Making (MCDM)
- Analytic Network Process (ANP)
- Total Interpretive Structural Modeling (TISM) Concept
- Elimination and Choice Expressing Reality (ELECTRE)
- Vlekkriterijumsko KOMPromisno Rangiranje (VIKOR)
- Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE)
- Simple Additive Weighting (SAW.)
- ABC Method

## **Part 2: Supplementing Machine Learning (ML) Techniques to the Management Research that cover:**

- Neural Network (NN.)
- Decision -Tree
- Support Vector Machine (SVM)
- Long-Short-Term Memory (LSTM) Method
- Random-Forest with ensemble techniques

## **Part 3: Presentation of Research Findings**

- Utilizing reference management tools for effective literature review and citation management.
- Navigating the principles of academic writing and research paper structure
- Reporting the analysis results to endorse the research findings

The program will conclude with a closing ceremony where participants will be awarded certificates of completion.

## **Learning Outcomes**

1. Enhance the ability to identify and articulate relevant research problems in the context of Management Studies, considering contemporary challenges and opportunities.
2. It enriches the competence in developing robust research frameworks that align with the identified problems, incorporating interdisciplinary perspectives and innovative methodologies.
3. The comprehensive knowledge of selective MCDM techniques enables participants to apply these methods effectively in the research process.
4. Develop proficiency in utilizing machine learning methods for diverse management research applications, including decision trees, neural networks (NN), support vector machines (SVM), Long-short-term memory (LSTM), and random forest.
5. FDP will impart the hands-on experience gained through practical exercises, case studies, and MCDM tools (ANP, TISM, ELECTRE, VIKOR, PROMETEE, SAW, ABC) and machine learning methods in real-world scenarios.
6. Competence in using MCDM tools for decision-making processes, including ANP, TISM, ELECTRE, VIKOR, PROMETEE, SAW, and ABC, to enhance decision quality in management research.
7. To enrich the capability to assess research objectives and dataset characteristics to select the most suitable machine learning method for a given research task.
8. Ability to integrate MCDM and machine learning techniques seamlessly into management research, fostering an interdisciplinary approach to problem-solving.
9. It improved problem-solving skills through interactive learning environments, including group discussions, Q&A sessions, and collaboration with peers and mentors.
10. Confidence and readiness to apply the acquired knowledge and skills in their respective research projects, contributing to advancements in Management Studies.

## **Targeted Participants**

Faculty members, Industry persons, Research Scholars, and Students of any discipline with basic computer knowledge can attend the programme.

## **FDP Venue**

**First-Floor, Department of Management Studies**

**Atal-Bihari Vajpayee-Indian Institute of Information Technology and Management, Morena Link  
Road, Gwalior, Madhya Pradesh - 474015**

## About the Institute

Atal Bihari Vajpayee-Indian Institute of Information Technology and Management (ABV- IIITM) in Gwalior, Madhya Pradesh, is an autonomous institute set by the Government of India, MHRD (Presently Ministry of Education, Govt. of India) in 1997. This institute was created to facilitate higher education, research, and consultancy in information technology (IT) and business management. Academics at our institute are focused on advancing knowledge and systematic understanding of course materials and their application areas. The institute aims to take academics to unprecedented levels of brilliance and efficiency.

## About the Department

The Department of Management Studies (DoMS) is an academic department of the ABV- IITM Gwalior. DoMS offers academic Programmes such as PhD, MBA, and Integrated Programmes in Management with dual degrees of B.Tech and MBA. The DoMS aims to develop holistic and responsible leaders by creating insightful knowledge and transforming human endeavors through technology-enabled management solutions.

## Registration Details

\$\$ Registration charge as per the following:

(i) Rs. 2,500/- for Online Participants

(ii) Rs. 3500/- for Offline Participants without hostel accommodation

(iii) Rs. 5,000/- for Offline Participants with hostel accommodation \*#

\$: The fee includes the knowledge sharing with the registered participants and the facilitation of supplementing course material by the instructor in electronic form only.

\*This includes workshop refreshment and working lunch of 07 days and gender-specific hostel accommodation of 06 nights on a twin-sharing basis.

# The participants can also avail of the guest room accommodation on a self-payment basis, subject to availability during the requisition period. Participants can send their requests separately to the workshop coordinators at least a week before arrival. The charges for such facilities shall be as per the institute's norms. In such cases, no relaxation shall be considered in offline registration charges.

## Mode of Payment:

Participants are required to transfer the fee amount to the following account through bank transfer/NEFT/UPI

Account no: 945210110009380

Account Name: Director, ABV-IIITM, Gwalior

Bank name: Bank of India, Gwalior branch

IFSC Code: BKID0009462

After Successful Payment please click on the following link for Registration:

<https://forms.gle/NE9aXQTokSNkixfF8>

For any further queries, kindly contact Mr. Sachin Kumar (+91-9808460208), Dr. Vinay Singh (+91-9479674107), or Dr. Manoj Kumar Dash (+91 9981380256)

## Indicative Contents and Tentative Schedule of the Workshop

Day-Wise Schedule and Time Slots Day-Wise Schedule and Time Slots							Additional Extended Hours for Offline Participants	
Date	10:00- 11:30 Hours	11:30- 11:45 Hours	11:45- 13:15 Hours	13:15- 14:00 Hours	14:00- 15:30 Hours	15:30- 15:45 Hours	15:45-17:15 Hours	5:30 PM-7:00 PM
09/02/2024	Inauguration Ceremony	Tea Break	Identification of research problem and research framework	Lunch Break	MDML – Concept Introduction (VS)	Tea Break	Application of MDML in Management Research (VS)	Day left-out and Hands-on Support
10/02/2024	ANP-Concept		ANP Hands-on		TISM-Concept		TISM-Hands-on	Day left-out and Hands-on Support
11/02/2024	ELECTRE-Concept		ELECTRE-Hands-on		VIKOR-Concept		VIKOR-Hands on	Day left-out and Hands-on Support
12/02/2024	PROMETHEE-Concept		PROMETHEE-Hand-on		SAW-Concept and Hands-On		ABC Concept and Hands on	Day left-out and Hands-on Support
13/02/2024	Decision-Tree Concept	Tea Break	Decision-Tree Concept	Lunch Break	NN	Tea Break	NN-Hands on	Day left-out and Hands-on Support
14/02/2024	SVM-Concept		SVM-Hands-on		LSTM-Concept		LSTM-Hands on	Day left-out and Hands-on Support
15/02/2024	Random-Forest Concept		Random Forest Hand-on		Random Forest Hand-on		Random Forest Hand-on	Valedictory Ceremony