

## **FACULTY DEVELOPMENT PROGRAM** **on**

# **Advanced Research Methods in Marketing** **Application of Artificial Intelligence & Machine Learning**



in collaboration with

**Centre of Applied Blockchain and Digital Transformation**

&

**Internal Quality Assurance Cell (IQAC)**

## PROGRAM DETAILS



The graphic is a promotional poster for an online faculty development program. It features a dark blue background with white and orange text. At the top left is the RP-Sanjiv Goenka Group logo. The main title 'Online Faculty Development Programme' is in white, followed by 'Advanced Research Methods in Marketing' and 'Application of Artificial Intelligence & Machine Learning' in orange. Three circular portraits of faculty members are shown: Dr. Gobinda Roy, Dr. Arunava Bandyopadhyay, and Dr. Arghya Ray. A QR code for registration is displayed. The contents and intended participants are listed in two columns. The bottom section mentions collaboration with the Centre of Applied Blockchain and Digital Transformation & IQAC, the dates May 17 to 19, 2024, and the location IMI Kolkata. A large circular image of the IMI Kolkata building is on the right.

**Online Faculty Development Programme**

**Advanced Research Methods in Marketing**

**Application of Artificial Intelligence & Machine Learning**

**Contents**

- ✓ AI/ML regressions in marketing research
- ✓ Decision Tree
- ✓ Random Forest
- ✓ Bayesian regression Models
- ✓ Logistic regressions

**Intendent Participants**

- ✓ Faculty members
- ✓ Doctoral students
- ✓ Working Professionals

**Registration**



*in Collaboration with Centre of Applied Blockchain and Digital Transformation & IQAC*

 **May 17 to 19, 2024**  **IMI Kolkata**

**IMI KOLKATA**

**DATE:** 17<sup>th</sup> to 19<sup>th</sup> May 2024

**Program Directors and Resource Persons:**

1. Dr. Gobinda Roy
2. Dr. Arghya Ray
3. Dr. Arunava Bandyopadhyay

**Program Co-ordination:**

1. Ms. Satabdi B. Chakraborty
2. Ms. Indrani Paul

**Panel Discussion Experts:**

1. Dr. Nirmalya Bandyopadhyay  
Professor, Fore School of Management, New Delhi
2. Dr. Tirthankar Nag,  
Professor, IMI Kolkata
3. Dr. Swagato Chatterjee  
Senior Lecturer, Queen Mary University of London

## NO. OF PARTICIPANTS

Total 49 participants (including 17 Faculty members and 32 doctoral scholars)

## AFFILIATIONS OF PARTICIPANTS

| Category          | Institute_name_or_affiliation                      |
|-------------------|--|
| Doctoral Scholars | Indian Institute of Technology, Kharagpur          |
| Doctoral Scholars | Indian Institute of Technology, Hyderabad          |
| Doctoral Scholars | National Institute of Technology, Durgapur         |
| Doctoral Scholars | Indian Institute of Management Shillong            |
| Doctoral Scholars | Indian Institute of Management Sambalpur           |
| Doctoral Scholars | Indian Institute of Management Indore              |
| Doctoral Scholars | IIFT Kolkata                                       |
| Doctoral Scholars | MICA   |
| Faculty Members   | Lal Bahadur Shastri Institute of Management, Delhi |
| Faculty Members   | DELHI school of economics                          |
| Doctoral Scholars | The Maharaja Sayajirao University of Baroda        |
| Faculty Members   | XLRI   |
| Doctoral Scholars | St. Xavier's University, Kolkata                   |
| Faculty Members   | University B.T. and Evening College Cooch Behar    |
| Faculty Members   | St. Joseph's Institute of Management               |
| Doctoral Scholars | Chandigarh University                              |
| Doctoral Scholars | Chandragupt Institute of Management Patna          |
| Faculty Members   | NSHM Business School                               |
| Doctoral Scholars | Pondicherry University                             |
| Doctoral Scholars | Amity University, Lucknow campus                   |
| Faculty Members   | Sandip University                                  |
| Faculty Members   | ICFAI Business School                              |
| Faculty Members   | Symbiosis Centre for Information Technology        |
| Doctoral Scholars | Jaipuria Institute of Management, Jaipur           |
| Faculty Members   | IQ City United World School of Business            |
| Doctoral Scholars | DMS, Kannur University                             |
| Doctoral Scholars | Kannur university                                  |
| Faculty Members   | JAIN UNIVERSITY                                    |

## PROGRAM SCHEDULE

### Day 1 | 17 May, 2024 | Friday

| Time                | Topic                                   | Session content  | Instructor      |
|---------------------|---|--|-----------------|
| 10:00 AM – 10:10 AM | Welcome Address                         |  | Director -IMIK  |
| 10:15 AM – 11:15 AM | Overview of R and Python                | Basic of R and Python programming environment  | Dr. Arghya Ray  |
| 11:30 AM - 12:30 PM | AI/ML regressions in marketing research | Overview of application of AI/ML regressions in research   | Dr. Gobinda Roy |
| 12:40 PM - 1:40 PM  | Decision Tree (DT)                      | Introduction to Decision Trees, Decision Tree Construction, Handling Categorical and Continuous Data, Test accuracy of the result (Creation of Confusion matrix) | Dr. Arghya Ray  |

### Day 2 | 18 May, 2024 | Saturday

| Time                | Topic              | Session content  | Instructor      |
|---------------------|--------------------|--|-----------------|
| 10:00 AM – 11:00 AM | Decision Tree (DT) | Visualizing the test set result, application in research                 | Dr. Arghya Ray  |
| 11:10 AM - 12:10 PM | Random Forest (RT) | Ensemble Learning and Random Forest Overview, Random Forest Construction | Dr. Gobinda Roy |

|                    |                    |  |                 |
|--------------------|--------------------|--|-----------------|
| 12:20 PM -13:20 PM | Random Forest (RT) | Parameter Tuning, Feature Importance and Interpretability, and application in research | Dr. Gobinda Roy |
|--------------------|--------------------|--|-----------------|

### Lunch Break

|                   |                        |  |                           |
|-------------------|------------------------|--|---------------------------|
| 2:20 PM - 3:20 PM | Bayes Regressions (BR) | The Basics of Bayesian Statistics, Introduction to Bayesian Regression, Bayesian Simple Linear Regression, Bayesian Multiple Linear Regression | Dr. Arunava Bandyopadhyay |
|-------------------|------------------------|--|---------------------------|

**Day 3 | 19 May, 2024 | Sunday**

| Time                | Topic                     | Session content  | Instructor                |
|---------------------|---------------------------|--|---------------------------|
| 10:00 AM – 11:00 AM | Bayes Regressions (BR)    | Fitting the Bayesian Model, and application in research  | Dr. Arunava Bandyopadhyay |
| 11:20 AM - 12:20 PM | Logistic Regressions (LR) | Introduction to Logistic Regression, Model Interpretation and Inference, Model Evaluation and Performance Metrics, and application in research | Dr. Arunava Bandyopadhyay |
| 12:30 pm – 13:30 PM | Publication Strategy      | How to publish in top marketing journal  | Panel Discussion          |

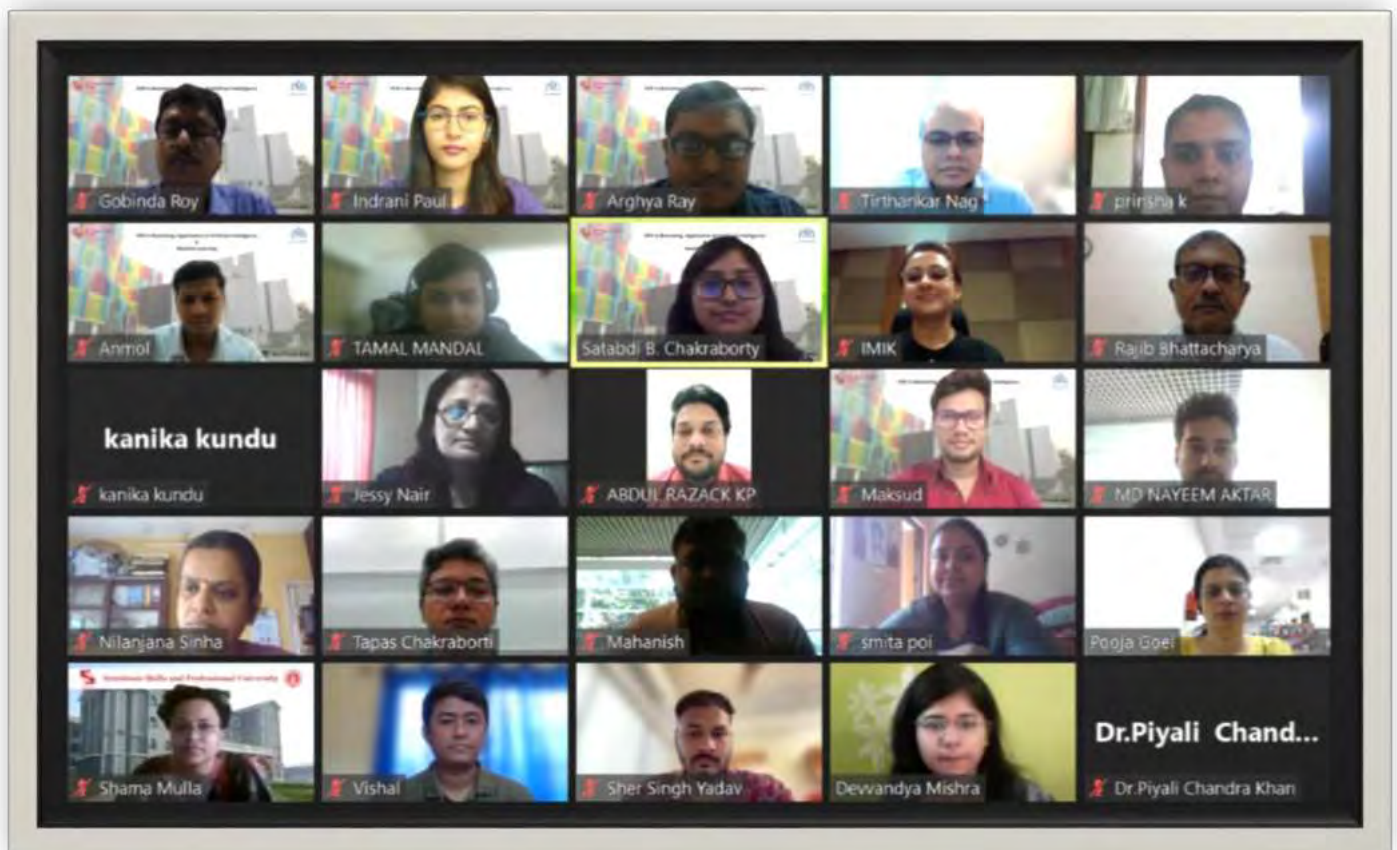


## FDP EVENT SEQUENCE

**DAY 1 | 17 MAY, 2024**

### 1. Inauguration & Photo Session:

The online inauguration session was graced by the presence of Director of IMI Kolkata, Dr. Mohua Banerjee, Dean Research IMI Kolkata, Dr. Tirthankar Nag and program directors Dr. Gobinda Roy, Dr. Arghya Ray, Dr. Arunava Bandyopadhyay along with other faculty members of IMI Kolkata and participants of the FDP. Dr. Banerjee delivered the Welcome Address to the participants in FDP, followed by an online group photo session in the zoom platform.



Picture Summary: Group photo taken after the inauguration session

## 1. Session 1 & 2: Basic of R and Python programming and overview of AI/ML regressions

The first session was focused on Basic of R and Python programming environment for the participants before starting with the hands-on practice using relevant dataset. The session was taken by Dr. Arghya Ray. Installing guideline for the software's were sent to the participant beforehand. In the second session, Dr. Gobinda Roy discussed the basic overview of application of AI/ML regressions in research with relevant example of research papers from marketing.

## 2. Session 3: Introduction to Decision Tree (DT)

Dr. Roy discussed the Decision Trees, focusing on the Decision Tree Construction, Handling Categorical and Continuous Data, Test accuracy of the result (with the help of Creation of Confusion matrix)

Recording

3

### 1. Three converging trends in Research – rise of AI/ML regressions

- **Trend 1: Rise of Big data:** Volume, variety, velocity, veracity and Variability (Hair et al., 2014) → New area of Analytics
- **Trend 2: Statistical model vs. data mining model** → Statistical model vs. algorithmic model (Breiman, 2004)\*: **Stat model/data model** focus on model fit and acceptability; **Algo model** – focus on process to prediction. ANN, RF, DT
- **Trend 3: Causal inference:** “Cause and effect” in non-experimental situation. (Pearl, 2009) → Structural Causal model (graphical representation of model): CB-SEM, PLS-SEM, GSCA-SEM.

IMI 42

Indrani Paul Gobinda Roy Mukul

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Picture Summary: Session taken by Dr. Gobinda Roy on basics of AI/ML regressions

## DAY 2: 18<sup>th</sup> May 2024

### 3. Session 4: Applications of Decision Tree (DT) in Marketing

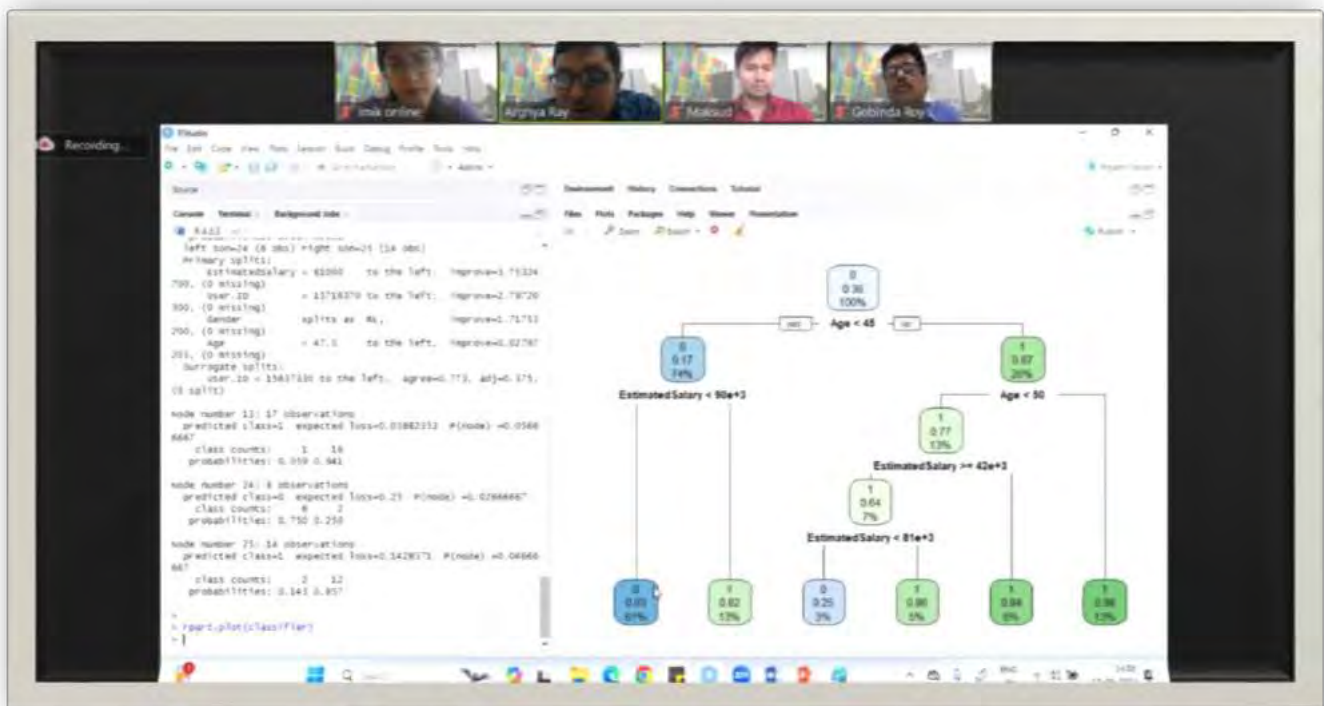
Day 2 started with the exploration of applications of Decision Tree (DT) in Marketing. The hands-on session was conducted using R software.

### 4. Session 5 & 6: Use of Random Forest in marketing research

Dr. Gobinda Roy delivered an engaging lecture on applications of Random Forest in marketing research as a tool of AI/ML regression. The session focus on ensemble learning and random forest overview, random forest construction, Parameter Tuning, Feature-Importance and interpretability and application in research

### 5. Session 7: Use of Bayes Regressions (BR)

Dr. Arunava took the session on use of Bayes Regressions (BR) in marketing research, emphasizing the basics of Bayesian Statistics, Bayesian Simple Linear Regression and Bayesian Multiple Linear Regression



Picture Summary: Session taken by Dr. Arghya Ray on Decision Tree (DT)



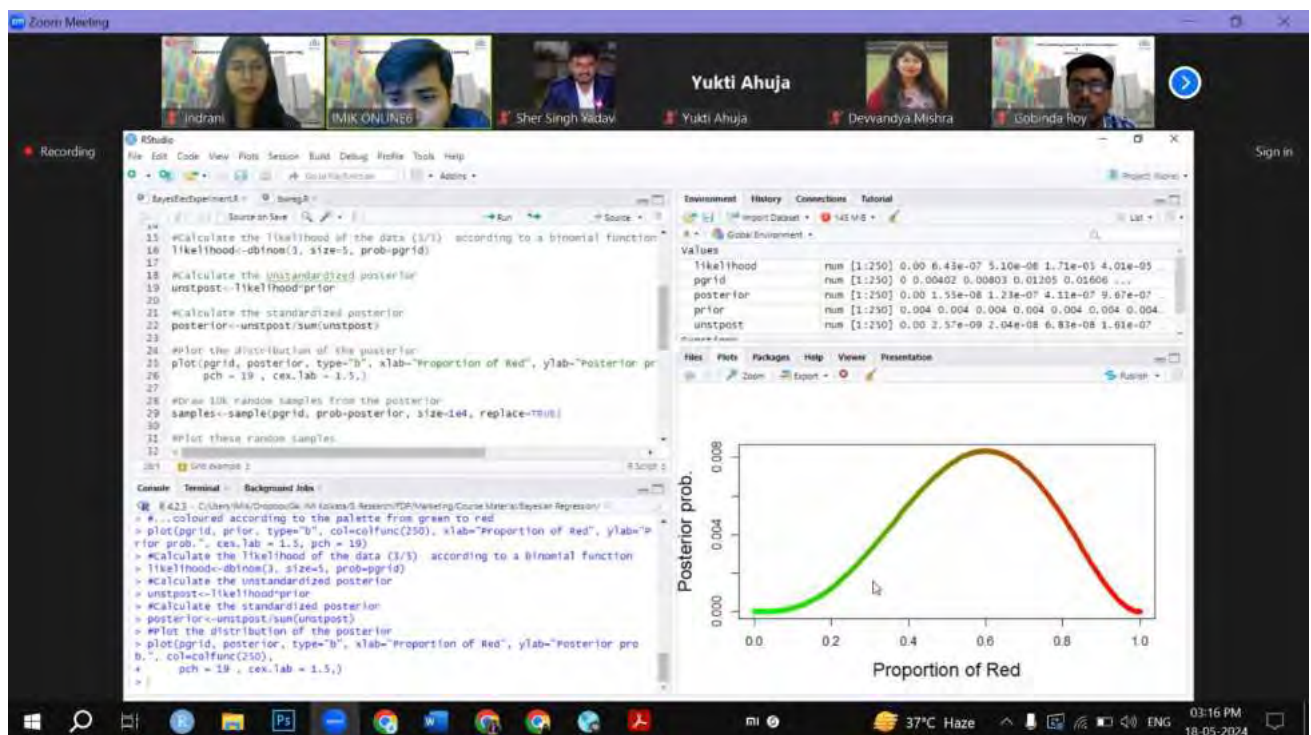
## DAY 3: 19<sup>th</sup> May 2024

### 6. Session 8: Bayes Regressions (BR) application:

Following the previous session with basics of BR, Dr. Arunava, extends the discussion on the application of BR in marketing research with hands-on practices using R software. The data set for practice in the session had been shared well before the session started for a smooth learning and practice session.

### 7. Session 9: Logistic Regression:

In the final lecture session of the FDP, Dr Arunava discussed the basics of Logistic Regression. This session emphasized on model interpretation and inference, model evaluation and performance metrics, and application in research using relevant high quality research articles.



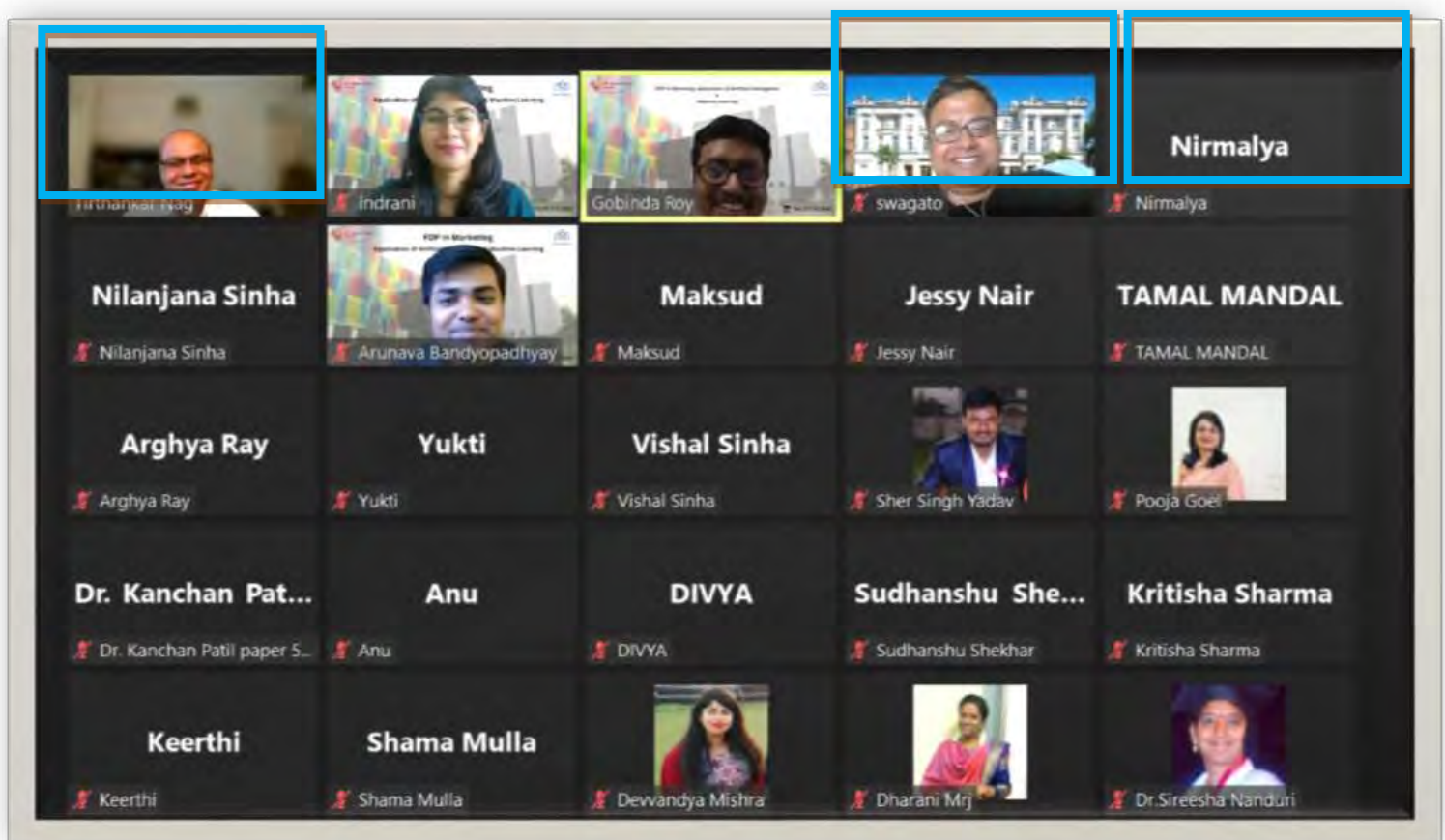
Picture Summary: Session taken by Dr. Arunava Bandyopadhyay on Bayes Regressions (BR)

## 8. Session 10: Panel Discussion & Valedictory Session

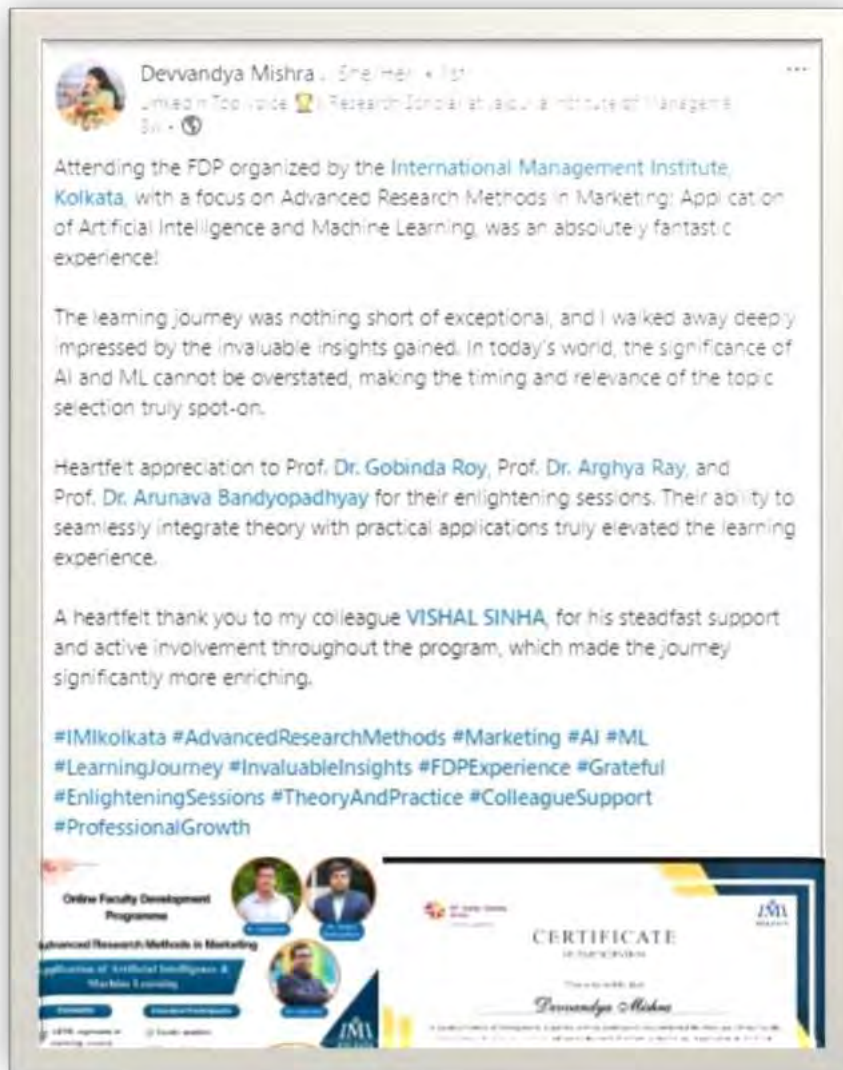
After the lecture sessions, a panel discussion was organized. The topic was “publication strategy of how to publish in top marketing journal”. The expert panel members Professor Nirmalya Bandyopadhyay, Professor Tirthankar Nag and Dr. Swagato Chatterjee shared their experience being the editor in chief of journals. Dr. Swagato Chatterjee, Senior Lecturer at Queen Mary University, London has been invited as an eminent researcher in the field of digital marketing and analytics. Prof. Nirmalya Bandyopadhyay, chief editor of Abhigyan. Also highlighted many significant points, EICs look for in a potential manuscript. Dr. Gobinda Roy moderated the whole session. The participants clarified their doubts regarding the publication processes from the eminent panel members.

At

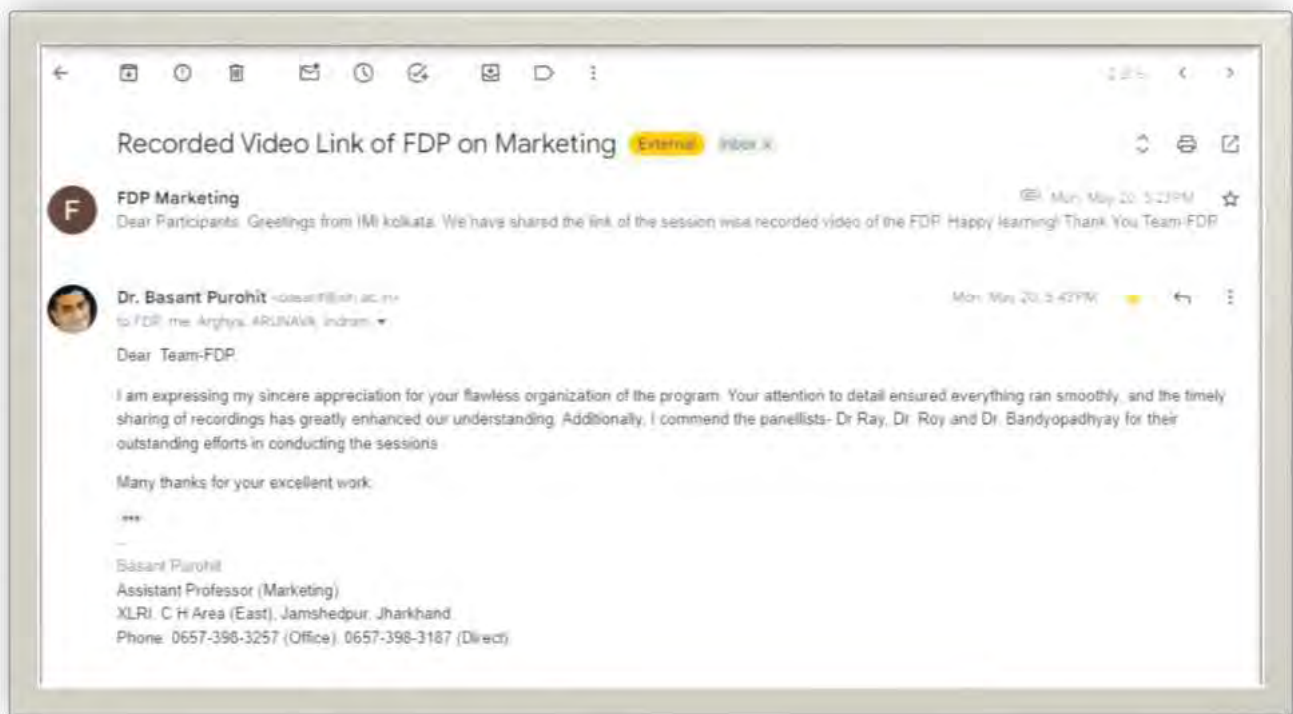
Picture Summary: Panel discussion with the panel members and participants



At the end of the FDP, the participants shared their feedback through google form regarding the sessions. Almost everyone has shared positive feedback with some suggestion such as they requested for a series of such engaging sessions to be conducted in future in the offline mode or in the summer or winter break. The session was concluded with a valedictory speech by Dean of Research, IMI Kolkata, Dr. Tirthankar Nag followed by a vote of thanks by Dr. Gobinda Roy.



Picture summary: Feedback received in LinkedIn from participant (Doctoral Scholar)



Picture summary: Feedback received in email from participant (Faculty)