

# 5 Days FDP on Quantitative Research Techniques: PLS-SEM & ANN

In collaboration with



**Dr. A.P.J. Abdul Kalam  
Technical University,  
Uttar Pradesh,  
Lucknow**

21-25 June, 2024

9AM – 5PM



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## BACKGROUND

Quantitative analysis is essential for researchers as it provides a systematic and rigorous approach to studying phenomena, generating empirical evidence, and advancing knowledge across various disciplines. By employing quantitative methods, researchers can make meaningful contributions to their fields, address pressing societal issues, and drive innovation and progress. Quantitative analysis allows researchers to measure phenomena objectively using numerical data. This reduces bias and subjectivity in the research process, leading to more reliable and valid results. Also, quantitative analysis enables researchers to draw statistically valid inferences about populations based on sample data. By employing statistical techniques such as hypothesis testing and confidence intervals, researchers can make generalizations and conclusions with a known level of confidence. The aim of this Faculty Development Program (FDP) is to equip participants with advanced skills and knowledge in data analysis and modeling techniques, specifically focusing on Partial Least Squares Structural Equation Modeling (PLS-SEM), Artificial Neural Networks (ANN), Fuzzy-set Qualitative Comparative Analysis (FsQCA), and Sentiment Analysis. This will empower the participants with the confidence to leverage advanced data analysis and modeling techniques in their academic and professional pursuits, ultimately contributing to advancements in their respective fields.

## OBJECTIVES

- To explore the intricacies of PLS-SEM, a powerful statistical method used for analyzing complex relationships between the variables. Learn how to apply PLS-SEM to various research domains and gain hands-on experience in model estimation and interpretation.
- To delve into the world of artificial intelligence and machine learning via Artificial Neural Networks (ANN). Discover how neural networks mimic the human brain's ability to learn and adapt, and master techniques for training and optimizing ANN models for pattern recognition tasks.
- To uncover causal relationships using Fuzzy-set Qualitative Comparative Analysis (FsQCA). Learn how to identify configurations of conditions that lead to specific outcomes and leverage fuzzy-set logic to analyze complex social phenomena.
- To harness the power of Natural Language Processing (NLP) and machine learning to extract valuable insights from textual data. Explore sentiment analysis techniques for gauging public opinion, customer feedback, and social media sentiment, and learn how to apply sentiment analysis to real-world datasets.

## FOR WHOM

- Faculty members
- Researchers
- Industry professionals
- Anyone interested in enhancing their skills in data analysis and modeling

## WHY TO ATTEND

- Engaging lectures by experts and experienced practitioners
- Hands-on workshops and practical exercises to reinforce learning
- Real-world case studies and applications across various domains
- Interactive discussions and networking opportunities with peers and professionals
- Comprehensive course materials and resources for continued learning

## PEDAGOGY

The FDP offers a mix of engaging lectures, hands-on workshops, real-world case studies, and interactive discussions. By incorporating these pedagogical strategies, you can create a dynamic and engaging learning experience that equips participants with the knowledge, skills, and confidence to apply PLS-SEM, ANN, FsQCA, and Sentiment Analysis in their research and teaching endeavours.

## RESOURCE PERSONS



### Prof. Puja Khatri

**Professor at University School of Management Studies**

**Area of Specialization**

Organizational Behaviour, Research Methodology, Scale Development and Validation, Partial Least Square Structural Equation Modelling, Psychometric Profiling

Prof. Puja Khatri, a Professor at University School of Management Studies, GGSIPU, Delhi, holds a PhD in Organizational Behaviour. She is a certified Behaviour Analyst, proficient with software like SmartPLS 4, R, AMOS, and SPSS. Awarded 'Best Professor in Organisational Behaviour' by ET Now, she has over 23 years of experience, 150+ research papers, and has presented at renowned conferences globally. She conducts workshops and serves as a resource person for institutions like Indian Oil, the Indian Army, and UGC HRDC. Prof. Khatri has authored six books and supervised multiple doctorate projects.



### Dr. Ajay Kumar Chauhan

**Founder of ResearchShiksha**

**Area of Specialization**

Research Methodology, Qualitative and Quantitative methods, Business statistics, Quantitative Finance and Business Analytics

Dr. Ajay Kumar Chauhan (M.Sc. Maths, MBA Finance, UGC NET, PhD in Finance) is the founder of "ResearchShiksha" and has served as Director FPM at UBS, Mumbai. He is a visiting faculty at several prestigious institutions including IIM Indore, MDI, IMT, NMIMS, IIFT, NIT, GIM, and IRMA, and was a full-time faculty member at IMT-Ghaziabad for eight years. Dr. Chauhan has published 25 international research papers and three books. He is renowned for his expertise in data science and analysis, having conducted over 1000 training workshops on topics such as Financial Econometrics, Time Series Analysis, Machine Learning using R and Orange, SEM, Panel Data Analysis, and Business Research Methods. He has also taught in Bulgaria and completed advanced econometrics training in Switzerland.

# PROGRAMME CONTENTS

## DAY 1: 21 JUNE 2024

Introduction to Measurement, Dimensionality and Item Analysis: Introduction to theoretical modelling, Discussion of lower and higher order constructs, Introduction to reflective and formative scales, Dimension identification through deductive and inductive inquiry, Face validation, Content validation, Calculation and assessment of I-CVI, S-CVI (S-CVI/UA, S-CVI/Ave), Modified Kappa ( $K^*$ ), Pilot testing through exploratory factor analysis, Hands on experience using SPSS.

## DAY 2: 22 JUNE 2024

Introduction to Structural Equation Modelling: Difference between CB-SEM and VB-SEM, Installation of SmartPLS Software, Handling reflective constructs, Handling formative model assessments, Hands on practice session.

## DAY 3: 23 JUNE 2024

Handling Higher Order Constructs: Reflective-Reflective and Reflective-Formative constructs, Practical orientation of Higher order constructs with repeated indicator approach and two stage approach, Importance of Control Variables and Marker Variables, Dummy coding of categorical data for applying control variables in SEM

## DAY 4: 24 JUNE 2024

Handling Mediation: Various types of mediation, Applying MICOM analysis, MGA as Moderation in PLS-SEM, Necessary Condition Analysis as next frontier in SEM.

## DAY 5: 25 JUNE 2024

Artificial Neural Network, FsQCA, and Sentiment Analysis: Understanding neuron functioning, Artificial framework of estimation, Network of hidden layers, Type of variables in ANN, Performing ANN in SPSS and Orange, Estimating prediction accuracy using RMSE and Confusion Matrix, Fuzzy Comprehensive - Quantifying Assessment (FCQA), Sentiment Analysis with text data.

# PROGRAMME FEE

**FDP Registration Fees:** Rs 2000 per participant.

For payment, scan the QR Code

**In case of any query, kindly contact -**

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## ORGANIZING TEAM

### PATRONS

**Prof. J. P. Pandey**

Vice Chancellor  
Dr. A.P.J. Abdul Kalam Technical  
University, Uttar Pradesh, Lucknow

**Shishir Jaipuria**

Chairman  
Jaipuria Group of Educational  
Institutions

**Prof (Dr.) Daviender Narang**

Director  
Jaipuria Institute of Management  
Indirapuram, Ghaziabad (U.P.)

**Prof. (Dr.) Rashmi Bhatia**  
Dean (Academics)

**Prof. (Dr.) Anubha**  
Professor

**Prof. (Dr.) Ajay Tripathi**  
Professor

**Dr. Divya Pant**  
Assistant Professor

**Dr. Himanshu Sharma**  
Assistant Professor

## ABOUT THE UNIVERSITY

Dr. A.P.J. Abdul Kalam Technical University (AKTU) (formerly UPTU) was established by the Government of Uttar Pradesh, vide Act Amendment No. 1156(2) LXXIX-V-1-15-1(Ka), 24-2015 dated Sept 9, 2015 Uttar Pradesh Adhiniyam Sankhya 23 of 2000. Under the University Act, 'Technical Education' includes programmes of education, research and training in Engineering, Technology, Architecture, Town Planning, Pharmacy, Applied Arts & Crafts and such other programmes and areas that the central Government may in consultation with All India Council for Technical Education (AICTE) by notification in Gazette declare.

The University is affiliating in nature and its jurisdiction spans the entire state of U.P. in affiliating B.Tech., M.B.A., M.C.A., B.Arch., B. Pharma., B.H.M.C.T., M.Tech. and Ph.D. programmes in 764 colleges/institutions imparting graduate, postgraduate and doctoral level training in all government and private institutions located all over U.P. in engineering, technology, architecture, pharmacy, hotel management and catering technology as well as M.B.A. and M.C.A. programmes. AKTU envisions to facilitate and nurture the quality of technical education and research in its own premises as well as all affiliating institutions.

## ABOUT THE INSTITUTE

Jaipuria Institute of Management was set up by Seth Anandram Jaipuria Educational Society in 2001. It has a sprawling campus spread over 5 acres at Indirapuram, Ghaziabad, a posh area on NH-24 within NCR. During this short span of 24 years, under the able guidance of the Late Dr. Rajaram Jaipuria and Shri Shishir Jaipuria JIM has been acclaimed as a leading business school in Northern India. Jaipuria Institute of Management, Ghaziabad, was established by fulfilling all the norms regarding academic, financial and social aspects set by concerned statutory bodies.

The Institute started a full-time 2 years Master Degree Program in Business Administration (MBA with Dual Specialisation) in the year 2001, MBA (Business Analytics) Program in the year 2020, and MBA in BFS, in the year 2022. All these programs are duly approved by AICTE, and affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow (UP). Moreover, Seth Anandram Jaipuria Trust and Seth Anandram Jaipuria Education Society manage various reputed schools and colleges in the country.

Jaipuria Institute of Management, Indirapuram, Ghaziabad, aims to provide quality management education to transform individuals into Business Leaders, Skilled Managers & Entrepreneurs. Jaipuria Institute of Management intends to provide and develop the capabilities of the young managers by raising their level of competence and intellect to face various challenges in the global environment. In pursuit of excellence, the institute provides training and development services, fosters research and disseminates knowledge through publication of books, journals and magazines for the development of society at large.



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