DECISION MAKING UNDER UNCERTAINTY

DURATION: 2 DAYS

PROGRAM CONTEXT

By the very nature of life, all of us must continually making decisions that we hope will solve problems and lead to increased opportunity for ourselves or the organisation for which we work. But making good decision is not an easy task. The problem faced by decision-makers in today's fast-paced business environment under uncertain conditions are often extremely complex and can be addressed by numerous possible courses of action. Evaluating these alternatives and choosing the best course of action represents the essence of decision analysis. The course is designed for middle to higher level managers and decision-makers.

The program is designed to achieve two critical objectives:

1. To increase your awareness and appreciation for WHY uncertainty matters.
2. To give you the tools to characterize uncertainty and to design flexible strategies that will be robust to uncertainty.

This course starts with mostly simple fundamental and computational methods and introduces some more difficult modelling concepts towards the end. This latter approach provides opportunities for much hands-on learning and participants leave with real practical knowledge of some of the basic algorithms. This method also, by design, fits in with our method of morning lectures and afternoon practice on computers.

The course will cover Probability, probability distribution, Bayes Theorem, decision modelling, decision tree, the value of information in decision and utility theory. Any decision taken by an individual not only depends upon the level of information available, some past experience, analysis of alternatives but also depends upon the risk taking ability of decision maker. Hence Utility theory plays a very important role in decision making.

LEARNING OBJECTIVES

- Be aware of the pervasiveness of uncertainty and its consequences for decision-making
- Understand problems of data collection, model formulation, available alternatives evaluation and impact of individual risk aversion behaviour on decision as learned through case studies
- To apply decision tree and decision models and their applications in real business situations
- Utilize commonly available MS Excel based software to estimate and test decision alternatives and final decision

PROGRAM CONTENT

- Fundamentals: Core concepts, understandings, and tools (30%)
- Latest Developments: Recent advances and future trends (10%)
- Industry Applications: Linking theory and real-world (60%)

PEDAGOGY

- **Lecture:** Delivery of material in a lecture format (20%)
- **Discussion** Guided discussion reinforcing lectures and computer lab work (40%)
- **Labs:** Computer-based participatory learning (40%)
- **Introductory:** Appropriate for a general audience (40%)
- **Specialized:** Assumes experience in practice area or field (50%)
- **Advanced:** In-depth explorations at the graduate level (10%)

AUDIENCE

Middle to senior level executives who faces challenge of decision making under uncertain conditions

TOPICS COVERED

Fundamentals of conditional probability, Normal and Binomial distribution, Bay's Theorem, Decision tree, Multi-stage decision making, Evaluating uncertain alternatives, Finding value of information, Bidding & Auction fundamental.

DELIVERABLES – THE PROGRAM THEMES

- Decision making under uncertainty
- Understanding of risk seeker & Risk avoider
- Analytical tools to support decision making: Decision tree, EMV, Utility theory etc

PROGRAM OUTLINE

The course consists mainly of a series of lectures, hand-on experience, real cases and supplemented by labs. The labs offer hands-on experience in applying the material covered in the lectures using decision tree software, spreadsheet based software. Few spreadsheets based add-in software will be distributed during class.

The topics covered and outline will be as follows:

Day 1: Fundamental tool to capture uncertainty

Probability, Probability distribution, Bayes theorem

Decision Models under uncertainty & under risk

Decision theory, decision model, Decision Tree

Day 2: Value of information in Decision

Multilevel decision tree, Value of information, *Advance tool for decision Analysis* Utility, function, Usage of utility function in decision analysis

Pre-requisite: Basic mathematical concept, basic knowledge of MS-Excel
During Course: All participants need to carry laptop with MS-Excel

ADMINISTRATIVE DETAILS

Mode: Offline
Fee: INR 25,000 (in-campus) per participant (plus 18% GST as applicable)

Venue: IMT Ghaziabad (Institute of Management Technology, Raj Nagar, Ghaziabad-201001)

PROGRAM DIRECTOR

Prof. Mrinalini Shah
Prof. Mrinalini Shah is a seasoned professor in the field of Supply chain & Decision Sciences. Prof. Shah's educational background is truly interdisciplinary which gives her a vast canvas for teaching, training & research in the field of Decision Sciences, Operations Strategy and Digital supply chain and analytics. Prof. Shah has won state, national & international scholarship for merit throughout her study. She is trained from Harvard Business School in education Management. She is trained and certified as Entrepreneurship Educator by NEN, IIMB & Stanford joint program of two-year duration.

Prof. Shah is founder chairperson of Entrepreneurship cell & incubation centre at IMT Ghaziabad. Prof. Shah was nominated as coveted ICCR Chair professor by republic of India to Republic of Greece and served at Athens university of Economics & Business. Prof. Shah has served as mentors and advisors of many start-ups. She has vast research publications in refereed international journals, presented papers and chaired the sessions nationally and internationally.

Her hobby includes trekking, cooking and reading (literature, spiritual, stories anything). She is presently learning photography as an amateur and believes life is all about upskilling.

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