



## **Developing Strategic Decision Making Capabilities through Application of Game Theory**

**September 20-24, 2021**

**Programme Co-ordinator: Prof. PKV Kishan**

### **About the Programme**

This programme is primed towards providing an exposure to the science of decision making, i.e. Game Theory. The programme attempts to logically ascertain the actions ‘players’ should take to ensure best outcomes for themselves in a wide variety of ‘games’ that govern business decision making. Through the programme the participants will recognize and infer the role of environment on strategic decision making and use the concepts learnt to gain a better understanding and take decisions appropriately.

Game Theory is concerned with decision-making. Decision-making is integral to a manager’s job. It is imperative for a ‘manager’ (read businessmen, politicians, coaches, etc.) to logically ascertain the actions that ‘players’ (others that include co-workers, subordinates, competitors, etc.) would take and hence determine his/her own set of ‘moves’ (read actions, decisions, etc.) which then have the potential to yield best ‘payoffs’ (read outcomes, profits, etc.) in a series of ‘games’ (read real life scenarios). All this constitutes strategic thinking. This programme endeavours to lay out the building blocks and present tools to enable the participants become better strategists.

The base assumption throughout the running of the programme is that all entities in an economy are rational agents, i.e. each entity is primed to maximize his/her/ its payoff irrespective of the circumstances. Under such assumption, we shall then see how the behaviour of the agent changes under various circumstances and consequently how the outcomes and payoffs differ.

### **Objectives**

- ◆ Identify strategic situations and represent them as games
- ◆ Provide solutions to games using various concepts
- ◆ Analyze economic and real-life scenarios and situations using game theoretic approaches
- ◆ Recommend the use of optimal strategies

## **Benefits of the Programme**

- ◆ Certificate of Participation from IRMA
- ◆ Exposure to carefully curated state of the art study material and to diverse views of fellow participants via class discussions
- ◆ Exposure to a new lens of looking at strategic situations and decision-making

## **Pedagogy**

Lectures, Games, Cases, Class Discussions

## **Who Should Attend**

Entrepreneurs, Business Leaders, Managers, Consultants, Think Tank Analysts and Researchers, State and Government Civil Servants, Bureaucrats, Employees in State and Central Ministries, Employees in Industry Associations (ASSOCHAM, CII, FICCI, etc.)

## **Programme Fee**

This is a 5-day online programme and the programme fee is INR 56,640/- (inclusive of 18% GST) per person. The fee should be paid in advance through NEFT/RTGS.

## **Delivery in Virtual Mode**

The sessions will be scheduled on an online platform. Participants are required to have access to a personal computer/laptop with stable internet connection and a webcam to access the sessions.

## **Resource Persons**

Prof. PKV Kishan

Prof. Nakul Parameswar

Prof. Aashish Argade

***Deadline for Confirmation of Participation: September 5, 2021***

### **Contact Details**

Oliver Macwan, Deputy Manager (Executive Training)

**Institute of Rural Management Anand**

Post Box No. 60, Anand 388001, Gujarat

Phone: (02692) 221841 • Mobile: 09974072693 • Email: mdp@irma.ac.in

**Day-1:**

- ◆ The game of "Win As Much as You Can" – Choosing between Empathy and Comradeship, and Cold Rationality
- ◆ The game of "Choose a Number"
- ◆ An introduction and a small history of Game Theory
- ◆ Terminology and Notations
- ◆ Extensive form and Normal form games
- ◆ A few basic examples
- ◆ Beliefs, Mixed strategies and expected payoffs
- ◆ General assumptions
- ◆ Introduction to Competition, Co-operation and Coopetition

**Day-2:**

- ◆ Best Response and Dominant Strategy
- ◆ Iterated elimination of dominated strategies
- ◆ A few applications
- ◆ Nash Equilibrium, Mixed-Strategy Nash Equilibrium
  - o Social welfare and other examples
  - o Median Voter Theorem
  - o Game between the Unequal (Small Player Competing Against Big/Incumbent Player)

**Day-3:**

- ◆ Cournot and Bertrand duopoly models
- ◆ Revisiting Extensive form
  - o Backward induction and Sub-Game perfect Nash Equilibrium – The example of Lucy and Charlie Brown
  - o Applications of Game Theory: Industrial Organization, Conflict, Bargaining, Media, Sports, Evolutionary Biology
  - o Applied Game Theory for Business Strategy

**Day-4:**

- ◆ Repeated Games – Two-period repeated game, Infinitely repeated game
- ◆ Applications – Dynamic Oligopoly and Collusion
- ◆ Reputation
- ◆ Games of Incomplete Information
- ◆ Asymmetric Information
- ◆ Risk Aversion
- ◆ Principal-Agent Problem
- ◆ Backward and Forward Integration and its effect on Competition

**Day-5:**

- ◆ Auctions
- ◆ Conditional Beliefs
- ◆ Sequential Rationality
- ◆ Perfect Bayesian Equilibrium
- ◆ Applications to policymaking and political theory
- ◆ Bayesian Nash Equilibrium
- ◆ Signaling and the Market for Lemons
- ◆ Strategic Evaluation and Control