

## Summary

- With the growth in the economy, we have seen a lot of large organizations having a large number of management specialists, needing a proper coordination for balancing the conflicting objectives because of the alternative courses of action available to the decision makers
- Each one of them try to uphold the interest of the organization from their specialized point of view but still there could be contradictory solutions, it is in such a situation that the whole system, the decision makers , the specialists will need help and Operations research attempts to resolve the conflicts of interest among the various sections of the organizations and seeks the optimal solutions which may not be acceptable to one department but it is in the interest of the organization as a whole
- Operation research is concerned with providing the decision maker with the decision aids like a total system orientation, scientific methods of investigations and models of reality, generally based on quantitative measurement and techniques
- Operations Research is concerned with scientifically deciding how to best design and operate man-machine system usually requiring the allocation of scarce resources. – Operation Research Society , America
- The successful application of operations research techniques for solving a problem must involve:
  - Constructing mathematical, economic and statistical model of the problem under study to treat situations of complexity and uncertainty. This helps to view the problem in its entirety
  - Analysing the relationships among different variables and /or parameters associated with the problem so as to determine consequences of decision alternatives
  - Suggesting suitable measures of desirability (effectiveness or objective function) in order to evaluate the relative merit of decision alternatives (courses of action, acts or strategies)
- The features of Operation Research to any decision and control problems can be considered under the following methodologies:
  - Interdisciplinary
  - methodological
  - Holistic
  - Objectivistic
- The most important approach among the mentioned one is the scientific method and building the decision model. There are three phases of the scientific method on which the Operations Research practice is based
  - Judgement phase
  - Research phase
  - Action phase
- The scope of the discipline Operation Research is very wide and has been a popular approach used in the industrial, government and Business problems. Its a common approach of breaking down a bigger system in to smaller systems, creating a model for the key features of a system instead of concentrating in every detail of the system

- A model is an abstraction of essential elements of the system which is constructed in various forms and establishing a relationship between the variables and parameters of the systems. A model, as the name symbolizes, captures only the key characteristics features of a system since there are constant changes that happen in a system

**For example,** in a factory, the flow of material can be modelled and it is not important to mention the colour of the machines or the temperature of the building unless and until these parameters are important for the functioning of the system

- For a model to be effective the key aspects of the reality that are being investigated must have a major impact on the decision situation. However good a model is, it cannot cover all aspects of a system and the reliability and effectiveness of a model depends on the validity of the model in representing the system. A model examines the behavioural changes of a system without disturbing the on-going operations
- Models can be classified based on different types and the notable ones are presented below:
  - Based on structures
  - Based on purposes
  - Based on Time reference
  - Based on degree of certainty
  - Based on methods of solution