

Knowledge Sprint

Module 3 : Operation Research - Different phases , Advantages, Disadvantages

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In this module, we will discuss below concepts -

- Different Phases of Operation Research
- Advantages of Operation Research
- Disadvantages of Operation Research

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Different Phases of Operation Research

Operation Research study is conducted in below steps.

1. Formulate Problem
2. Develop OR model
3. Select Best OR model
4. Validate OR Model
5. Sensitivity Analysis
6. Decision making and implement OR model

Let us know study about each step in detail.

1. To formulate the Problem

- Objectives are defined
- Range of Controllable variables are identified
- Identify the uncontrollable variables that may cause damage
- Understand Restrictions
- Understand nature or condition of variables

This phase is considered is importance for the reason, any wrong analysis done at this stage would replicate wrong decisions and results



2. Develop an appropriate Operation Research models

- As the name indicate, it is about selecting right Operation Research model to be applied to find solution to a problem
- Operation Research model selection generally is based on below factors
 - Variables
 - Parameters
 - Restrictions
 - Objective of research

3. Select best OR Model

- Here it is process of selecting right selection of solution after evaluation of all alternate solutions
- All pro's and concerns are analysed of each solution available, then finally a best solution method is selected

4. Validate the Operation Research Model

- Here it is tested for errors before proceeding to testing at organizational level
- Once it is passed with reliability of its performance, on research it is put to next stage
- Otherwise, it is subjected to changes and looked into matter of reconsideration of alternate method again, that means discarding the method and select the next best operation research method for testing

5. Sensitivity Analysis

- In this stage, operation research method is used as per satisfaction levels of Business needs
- The method is put to changes, when there is an change in variables of organisational research in real terms, otherwise the results might show incorrect data of performance.
- This action of reconsideration of changes in variable is known as Sensitivity Analysis

6. Decision Making and implementation of specific solution

- Finally, in this stage the model is put to use in real terms and implemented to work
- The implementation of Operation Research needs a cooperation of OR Specialist with Business operations , managing teams etc
- A positive cooperation will always results in good yields

Advantages Of Operation Research

1. Provide a Better Strategies -
 - The core idea of Operation Research is to provide a better means of economics in Business Operations
 - This is done by better decision making, choosing right strategies etc
 - All this can be studied under operation research for any field of business
2. Managers have better Decision making systems with use of Operation Research
3. Improves Yields of business and least costs
4. Operation Research can be applied to any field of operations, like - transportation, Warehouse, Production management, Assignment of jobs etc

5. Fundamentally, it is purely scientific model, any OR Model is put to implement after various considerations and subjected to testing. The results obtained from it realistic in terms rather than simple predictions

6. Operation Research clearly defines controllable and uncontrollable variables while in its operations and are applied to any situations

7. Other notable advantages are -

- Rise in production or productivity
- Understand Anomalies in business operations
- Better control of Business Operations
- Helps Managers to take better decisions
- Helps to improve organisational products and services

Disadvantages of Operation Research(OR)

1. Operations research (OR) is an interdisciplinary of mathematical science
 - Need a personnel to have skills of statistics, and mathematics
 - Most of managers are not well proficient in such activities
 - They depend of OR specialist
2. There are instances of Coordination issues between OR Specialist and Business Operation Teams or Managers
3. OR makes extensive use of computers
4. The most popular OR techniques like simulation, linear programming, data mining, game theory and decision tree analysis are suffering from inbuilt flaws

5. Operations research itself is very costly

- An Organisation needs to invest a lot of money and effort into OR in order to make it effective
- It is suitable to large companies
- May not be a viable option for small or midsize companies, as it is a costly affair

6. Need of OR Specialist(professional) to manage OR related tasks

7. Analysis is only based on Quantifiable factors and expressed in terms of numbers and expressions only. It does not consider Human behavioural issues.

8. Sometimes, the results of OR show disconnection to real world business conditions

9. More importantly, time consuming process



Thank you

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