

## **BACKGROUND TO OPERATIONS RESEARCH (OR)**

### **1. ORIGIN OF OPERATIONS RESEARCH**

The roots of OR can be traced back many decades when early attempts were made to use scientific approach in management of organizations. However, the beginning of the activity called OR has generally been attributed to the military service in early World War II. Because of the war effect, there was an urgent need to allocate scarce resources to the various military operations and to the activities within each operation in an effective manner. Therefore the British and the Americans management called upon a large number of scientists to apply scientific approach to dealing with this situation. In effect, they were asked to do research on (military) operations

These teams of scientists were the first Operations Research teams. Their efforts allegedly were instrumental in winning the Air Battle of Britain, the Island campaign in the Pacific, the battle of the North Atlantic, etc.

Spurred on by the success of OR in the military, industry gradually became interested in the new field.

Two factors played a key role in the rapid growth of OR during the period:

- ◆ The substantial progress that was made early in improving the techniques available to OR. Many of the standard tools for OR e.g. Linear Programming, Dynamic Programming, Queuing Theory and Inventory Theory were relatively developed.
- ◆ The onslaught of the computer revolution: the development of the electronic digital computers with their ability to perform arithmetical calculations thousand times faster than a human being can, was a tremendous boom to OR.

### **2. NATURE OF OPERATIONS RESEARCH:**

OR may be described as a scientific approach to decision making that involves the operations of organizational systems. As the name implies, OR involves “research on

operations”. It is applied to problems that concern how to conduct and co-ordinate the operations or activities within an organization

The approach of OR is that of scientific method. In particular, the process begins by carefully observing and then constructing a scientific (typically mathematical) model that attempts to abstract the essence of the real problem. It is then hypothesized that this model is a sufficiently precise representation of the essential features of the situation, so that the conclusions (solutions) obtained from the model are also valid for the real problem. This hypothesis is then modified and verified by suitable experimentation. Thus, in a certain sense, OR involves a creative scientific research into the fundamental properties of operations. **Specifically, OR is concerned with the practical management of organization**

An additional characteristics of OR is that it attempts to find the best or optimal solution to the problem under consideration rather than being content with merely improving the status quo. The goal is to identify the best possible course of action

### **3. THE METHODOLOGY OF OPERATIONS RESEARCH**

When OR is used to solve a problem of an organization, the following seven –step procedure should be followed:

- i. Formulate the problem.
- ii. Observe the system
- iii. Formulate a mathematical model of the problem
- iv. Verify the model and use the model for prediction
- v. Select a suitable alternative.
- vi. Present the results and conclusions of the study to the organization.
- vii. Implement and evaluate the recommendations.