

Operation Research:

It is the method of analysis by which management receives aid for their decisions. Though the name of this method, Operation Research (O.R.) is relatively new, but the method used for this is not a new one. Operation Research is concerned with the application of the principles and the methods of science to the problems of strategy.

The subject of operation research was born during Second World War in U.K., and was used for military strategy. During World War II, a group of scientists, having representatives from mathematics, statistics, physical and social sciences were entrusted to the study of various military operations. This team was very successful and greatly contributed to the meticulous handling of entire operation and related problems of the operation.

The need for assigning such studies for operations arose because military strategies and their decisions become so important and costly and therefore, the best scientists, under the sponsorship of military organs were grouped together to provide quantitative information's by adopting scientific techniques and methods for facilitating in taking decisions.

After the World War II, it was started applying in the fields of industry, trade, agriculture, planning and various other fields of economy.

(i) It is the application of scientific methods, techniques and tools to problems involving the operations of a system so as to provide those in the control of the system with optimum solutions to the problems.

(ii) Operation Research is a tool for taking decisions which searches for the optimum results in parity with the overall objectives and constraints of the organisation.

(iii) O.R. is a scientific method of providing executive department with a quantitative basis of decisions regarding the operations under their control.

(iv) O.R. is a scientific approach to problem solving for management.

(v) O.R. is an aid for executive in making his decisions by providing him with the needed quantitative information's based on the scientific method of analysis.

(vi) O.R. is the application of modern methods of mathematical science to complex problems involving management of large systems of men, machines, materials, and money in industry, business, government and defence. The distinctive approach is to develop a scientific model of the system incorporating measurement of factors such as chance and risk, to predict and compare the outcome of alternative decisions, strategies or controls.

(vii) It is the application of the scientific methods by scientists and subject specialists to the study of the given operation. Its purpose is to give administration, a basis for predicting quantitatively the most effective results of an operation under given set of variable conditions and thereby to provide a sound basis for "decision-making".

In fact in Operation Research, research techniques and scientific methods are employed for the analysis and also for studying the current or future problems. Thus, Operation Research offers alternative plans for a problem to the management for decisions.

Although it is very clear that operation research never make decisions for the management, instead the method presents management with a careful scientific and quantitative analysis of problem so that the management will be in a better position to make sounder decisions.

It can be used for solving different types of problems, such as:

i. Problems dealing with the waiting line, the arrival of units or persons requiring service.

ii. Problems dealing with the allocation of material or activities among limited facilities.

iii. Equipment replacement problems.

iv. Problems dealing with production processing i.e., production control and material shipment.

But it may be remembered that operation research never replaces a manager as decision maker. The ultimate and full responsibility for analysing all factors and making decision will be of the manager.

In the more wide sense, operation research does not deal with the everyday problems such as output by the one worker or machine capacity; instead it is concerned with the overall aspect of business operation such as something as the relationship between inventory, sales, production and scheduling. It may also deal with the overall flow of goods and services from plants to consumers.

The team doing operation research may have statisticians, psychologists, labour specialists, mathematicians and others depending upon the requirement for the problems.