

Examrace

Competitive Exams: Management Science

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Various mathematical tools like the waiting line theory or queuing theory, linear programming, the program evaluation review technique (PERT), the critical path method (CPM), the decision theory, the simulation theory, the probability theory, sampling, time series analysis etc. Have increased the effectiveness of managerial decision-making. To apply a quantitative approach to decision-making, individuals with mathematical, statistical, engineering, economics and business background skills are required. Since one person cannot have all these skills the quantitative method requires a team approach to decision-making. This approach has been criticized for its overemphasis of mathematical tools. Many managerial activities cannot be quantified because they involve human beings who are governed by many irrational elements.

The management science approach stresses the use of mathematical models and statistical methods for decision-making. It visualizes management as a logical entity, the action of which can be expressed in terms of mathematical symbols, relationships and measurement data. Another name commonly used for management science is operations research. Recent advances in computers have made it possible to use complex mathematical and statistical models in the management of organizations. Management science techniques are widely used in the following areas:

- Capital budgeting and cash flow management
- Production scheduling
- Development of product strategies
- Planning for human resource development programs
- Maintenance of optimal inventory levels
- Aircraft scheduling

Operations Management

Operations management is an applied form of management science. It deals with the effective management of the production process and the timely delivery of an organization's products and services. Operations management is concerned with:

1. inventory management
2. work scheduling

3. production planning
4. facilities location and design
5. quality assurance.

The tools used by operations managers are forecasting, inventory analysis, materials requirement planning systems, networking models, statistical quality control methods, and project planning and control techniques.

Modern Approaches to Management

Besides the classical, behavioral and quantitative approaches to management, there are certain modern approaches to management. Two of these approaches are the systems theory and the contingency theory, which have significantly shaped modern management thought.

Systems Theory

Those who advocate a systems view contend that an organization cannot exist in isolation and that management cannot function effectively without considering external environmental factors. The systems approach gives managers a new way of looking at an organization as a whole and as a part of the larger, external environment.

According to this theory, an organizational system has four major components: Inputs, transformation processes, output and feedback. Inputs money, materials, men, machines and informational sources are required to produce goods and services. Transformation processes or throughputs managerial and technical abilities are used to convert inputs into outputs. Outputs are the products, services, profits and other results produced by the organization. Feedback refers to information about the outcomes and the position of the organization relative to the environment it operates in:

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