



Decision Making Tools : Facts in Business and Economic Field

Research Paper—Mathematics

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Introduction :-

OR is used in many different industry segments - from health care to logistics to financial service. It is also applied in different business functions from finance to manufacturing and marketing. It helps to solve diverse business problems such as identifying best product placements in retail establishments to ensuring appropriate inventory levels in spare parts manufacturing. Technology, computing, and information science all leverage OR's historical and current intellectual thought to enhance practical application.

Operations Research employs high - performance computing capabilities to achieve its objectives. There is a close connection between Operation Research (OR) and commercial software. A wide array of software products, from Excel Solver to high performance parallel processing simulation tools, are based on OR-developed abstract ideas and concrete algorithms (several of these packages, notably CPLEX and AMPL for optimization, were developed by Cornell alumni). Such software products are used to solve OR models that are routinely used in manufacturing, distribution, marketing and other business functions.

What is Operational Research ?

Operational Research (OR) is the use of advanced analytical techniques to improve decision making. It is sometimes known as Operations Research, Management Science or Industrial Engineering. Operational Research helps researchers in decision making. Business analytics, marketing analysis and logistics planning.

Why is OR needed ?

Because it makes sense to make the best use of available resources. Today's global markets and instant communications mean that customers expect high-quality products and services when they need them, where they need them. Organisations, whether public or private, need to provide these products and services and as effectively and efficiently as possible.

This requires careful planning and analysis - the hallmarks of good OR. This is usually based on process modelling, analysis of options or business analytics.

Examples of OR in action:-

* Scheduling :

of aircrews and the fleet for airlines, of vehicles in supply chains, of orders in a factory and of operating theatres in a hospital.

* Facility planning :

Computer simulations of airports for the rapid and safe processing of travellers, improving appointments systems for medical practice.

* Planning and forecasting :

Identifying possible future developments in telecommunications, deciding how much capacity is needed in a holiday business.

* Yield management :

Setting the prices of airline seats and hotel rooms to reflect changing demand and the risk of no shows.

* Credit scoring :

Deciding which customers offer the best prospects for credit companies.

* Marketing :

Evaluating the value of sale promotions, developing customer profiles and computing the life - time value of a customer.

* Defence and peace keeping :

Finding ways to deploy troops rapidly.

Some OR methods and techniques:-

* Computer simulation :

Allowing you to try out approaches and test ideas for improvement.

* Optimisation :

Narrowing your choices to the very best when there are so many feasible options that comparing them one by one is difficult.

* Probability and statistics :

Helping you measure risk, mine data to find valuable connections and insights in business analytics, test conclusions, and make reliable forecasts.

* Problem structuring :

Helpful when complex decisions are needed in situations

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with many stakeholders and competing interests.

Methodology:-

We would like to visit some firms and collect existing information regarding their resources available and output. We try to use our techniques like linear programming, transportation, programme evaluation and review techniques and so on and try to use in their process and to see the effect of this as far as cost, time and labour hour saving are concerned.

Sources of data :-

To undertake manufacturing firms, business firms, educational institutes for this project. Decision about the firms will be taken randomly and with their prior permission.

Conclusion :-

The research program in decision science / operations research aims to improve the quality of decisions about man-

aging scarce and valuable resources. Such resources include not only financial resources but also issues related to the quality of human life, medical treatment, the environment and many other important issues. Organizations in industry, government, medical care, and other areas commonly encounter planning scenarios in which using scarce resources as efficiently as possible is crucial to the ability of the organization to perform successfully. In many situations, it is necessary to plan operations in a way that both explicitly evaluates many different alternatives, and rigorously accounts for constraints on resource utilization. Optimization is the area of operations research that deals with devising mathematical models and methods to identify a plan that is as good as possible in specific situations.

REFERENCE

1. M. Bozbay (consultant at a global management-consulting firm), "Large Scale Supply Chain Optimization via Nested Partitions"
2. A. Krishnamurthy (faculty member in a department of decision sciences and engineering systems), "Performance Analysis of Material Control Strategies for Multi - Stage Multi - Product Manufacturing Systems"
3. S.-W. Lin (faculty member in a department of business administration), "Designing Incentive Systems for Risk - Informed Regulation"
4. Y. Pan (post - doctoral researcher in a department of industrial engineering), "Production Scheduling for Suppliers in Extended Manufacturing Enterprises"
5. A. Resnick (analyst in a large contract-research company), "Models for Optimizing Component Safety Stock Levels in Large - Scale Assembly Systems"
6. M. Wang (faculty member in a department of industrial engineering and management), "Guidelines for Risk-Based Inspection Programs Based on Approximate Optimal Surveillance Test Intervals".