

Fact Sheet: Operational Research and Its Applications



WHAT IS OPERATIONAL RESEARCH?

Operational Research (OR) is a discipline that uses analytical methods to aid decision-making and problem-solving. By applying mathematical modelling, statistical analysis, and optimisation techniques, OR enhances efficiency and effectiveness in various domains.

BENEFITS OF OPERATIONAL RESEARCH

- Better decision-making through data-driven insights.
- Increased efficiency by minimising waste and redundancy.
- Cost savings by optimising resources and processes.
- Enhanced forecasting for demand and supply fluctuations.

MODERN TECHNIQUES IN OR

- **Simulation:** Testing scenarios to predict outcomes without real-world risks.
- **Optimisation:** Identifying the best solution among various alternatives.
- **Data Analytics:** Using historical data to inform decisions and uncover trends.
- **Machine Learning:** Enhancing predictive models and adaptive systems.

REAL-WORLD IMPACT

Companies like Amazon and airlines use OR to streamline operations, while governments apply it to improve urban planning and emergency response systems.

CASE STUDIES:

www.theorsociety.com/OR-in-real-world

KEY AREAS OF APPLICATION:

Logistics and Supply Chain Management:

Optimising routes, inventory levels, and resource allocation to reduce costs and improve delivery times.

Healthcare:

Enhancing hospital operations, staff scheduling, and resource utilisation to improve patient outcomes.

Manufacturing:

Streamlining production processes, managing capacity, and reducing waste.

Transportation:

Planning schedules, improving traffic flow, and managing fleet operations.

Finance:

Assessing risks, optimising investment portfolios, and pricing strategies.

Other sectors:

Retail, Defence Government & Sport

WHY IT MATTERS

Operational Research transforms complex challenges into structured, actionable solutions, driving innovation and efficiency across industries. Why OR is important in business - How Operational Research is the Hidden Gem of Business Decision ORS