PREFACE

Operations Research is something more than the group of quantitative techniques. It is a philosophy resulting into an attitude towards problem solving techniques. It makes an attempt to identify the problematic areas and simplifying it further so that it can be easily understood in the multidimensional environment.

Understanding the process of technology management in firms during its entire life cycle includes forecasting, assessment, transfer, assimilation, learning and development etc. Operations researchers are expected to act as catalysts to steer technology management in the organisations to get competitive advantage over the competitor in the changing global business environment.

Operations research provides the business executive confronted with managerial problems of continuously increasing complexities, with a sound quantitative basis for decision making. Its synergestial approach and analytical ability makes operations research the most suitable for an amazingly wide variety of decision environment.

Optimal use of capacities and resources is the key problem before operation-management of any organisation. In an integrated approach, what appears as the most profitable product may not be the most gainful to produce. The determination of true optimally is beyond human comprehension.

Development of any country depends upon the adoption of a realistic approach to ensure that the results of scientific and engineering researches find their ways into industrial production, to meet with a variety of requirements of the
society at large. The entire spectrum of activities required for achieving this objective encompasses a large scale production, quality control, marketing and management with built-in closed loop for feedback correction mechanism at each stage.

In the process of accelerating the pace of economic growth of a country, efficient management of infrastructure and service would play a key role.

In the age of information superhighway, demand arises to respond quickly on events and situations in the fast changing real time world of demassified society. For this efficient communication, services like banking, insurance and transport infrastructure assume paramount importance. Hence availability of information in almost all the sectors of national importance mainly required for planning and decision making, have been regularly made available.

The rate of development of a country depends not only upon how much capital it has for investment, but also on how well the investments are made. Return on investment depends to a large extent on the amount and kind of national development planning.

What is rational from individuals point of view seldom coincides with what is rational from the collective point of view. Hence the analyst striving to improve the effectiveness and efficiency of an organisation according to its own principles of rationality may at the same time, act in contrast to the country's socio-economic development objectives. But the benefits of these techniques have been less recognised in some engineering areas. The reason is less sensitiveness to innovative
ideas involving measurement, modeling and production requirement.

Sometimes economic optimisation may not be the only criterion responsible for setting up the objective of practicing enterprise. In reality, however multiple conflict objectives are involved which are important factors greatly influencing the decision making process.

To improve productivity through design, production planning & scheduling techniques of manufacturing process, the optimal use of firm’s production resources are some of the most important management decisions. Optimal allocation of resources can often be a critical determinant of profitability in a highly competitive business environment. Frequently, the efficient production planning under fluctuating demand environment, the determination of the most efficient level of production and inventory may result into substantial savings by way of reduction in production overhead cost. Thus the improved profitability can be achieved through reduced lead times and inventory levels, rapid response to market changes and improved manufacturing effectiveness through increased operational flexibilities.

In this academic work, an attempt is made to formulate and analyse certain types of procurement models considering the lead time situations. The models developed are illustrated by means of applications in the respective areas whenever they are found to be suitable. The developed procurement models not only helps in the strategic planning regarding procurement of raw commodity but also helps in the strategic planning regarding warehousing facilities, human resource management, business negotiation, financial requirement, expansion of plant/business activities etc.