SYNOPSIS

"SOME PROBLEMS CONNECTED WITH OPERATION RESEARCH AND APPLICATIONS"

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PURPOSE OF STUDY :

As birth of Science has not taken place on any particular day operations research also is not an exception to it. Its roots are as old as those of science and human society. Firstly the term operations research was coined during world war second. Mathematicians, Statisticians, Scientists and Researchers have contributed their efforts for the development and applications of operations research techniques in various fields of science engineering and technology in particular to name a few, Dijkstra Minkowskii, G.B. Dantzig, Arnoff, Hoarse, T.C. Koopmans, Hadley, P.M.S. Blackett, Hitchcock, etc. These techniques are successfully applied in the fields of defence, agriculture, industry, production management, finance and many other areas. OR is concerned mainly with the optimal decision making. OR is concerned mainly with the optimal decision making, modelling of deterministic and
probabilistic models that originate from real life. Under these situations from the scientific analysis an adequate amount of insight is obtained that is provided through the operations research.

Now-a-days the subject of operations research has been recognized as a discipline whose mastery is fundamental and crucial to the success of many engineering projects and which is amenable to scientific treatment and presentation. On account of its wide applicability and a very close concern with our day-to-day real life practical problems, it has motivated me to study and to do research work in the area of operations research.

Problems from every phase of industry have been formulated and successfully evaluate by using the simplex method of Linear Programming Problem developed by the Prof. G.B. Dantzig in 1947. Agriculture sector is also responsible for the growth of Industry, trade, transport, banking and business services, which in turn influence the growth of GDP. Many of the pulses and oilseed crops as well as commercially important crops such as sugarcane, tobacco and chillies remained outside of the phenomenon of technological change for a long time (Shete, 1995). With the introduction of modern technology, inputs high yielding varieties of crop fertilizers, labour saving machines, the
importance agricultural statistics in research has become of crucial importance to the decision making both at the farm myt. Leqel and national level in view of the emphasis now being laid on the rapid development of agricultural sector to sustain and develop the general economy of the country.

The usefulness of multidisciplinary research is gaining attraction of scientists to a large extent. In the year 1982 Sir Brain at the Glasgo chamber of commerce has said "India is great and valuable country on the east" John W. Meller (1980) had drawn attention to the changing needs for effective agricultural policy.

P.K. Bose has rightly quoted that in order to achieve the twin objectives of self sufficiency of food and commercial crops and increasing the employment and income of farming community, a suitable agriculture plan should be drawn up. In shaping future agricultural research the statistician and mathematicians have to play a vital and innovative role.

Operational Research describe the application of specialized quantitative techniques to solving problem met in industry in commerce and in administration, operational research provides an understanding
which gives the manager new insights and capabilities to determine between solution in his decision making problems with great speed, competence and confidence. In the recent years of organized development, operational research has entered successfully many different areas of research for military, government Industry, private Industry and agriculture operational research techniques have been used by a number of experts for getting optimum plans for individual farms situations and also these techniques have been employed for optimal planning at macro level, a group of farms, a region, a state, a country as a whole. Application of L.P. is useful to the planners who are engaged in the development of urban and rural sectors.

**SCHEME OF PROPOSED WORK**

This proposed work consists operational research techniques of some linear programming models with the applications of some new techniques having wider applications in science, engineering and technology, neuro-physiological systems etc. It has vital influence in approximating the L.P. model with accurate predictions.

This research work need for the study alongwith the resume of some relevant contributions on linear programming. Further a brief
review of the various operations research techniques also have to be presented in order to highlight the objectives in its right perspectives. Loopman has independently published a study on optimum utilization of transportation system. Presently an initial basic feasible solution is obtained by any of following methods, NWCR, MMM, VAM, LCM, RAM, HMPFM etc. and then its optimality is checked by using the stepping stone or modified distribution method. An assignment problem which is a special case of LPP can also be evaluated by using the methods viz., Enumeration method, Hungarian Method etc.

An attempt is made to evaluate an unbalance transportation problem without converting it to balanced one and this has been shown and proved through an illustrative example(s) row penalty and or column penalty method have been developed. This further reduces the computations and also the number of iterations. A new non-basic smallest effectiveness method for testing the optimality of initial solution, overcoming the problem of degeneracy of transportation has been developed giving optimal solution in less number of computations and steps.

It deals with a new approach to solve a transportation problem involving introduction, proof of the newly established theorem on the
existence of feasible solution. A new approach to get a solution to an assignment problem involving the introduction and algorithm of three methods as RCPAM, RPAM and CPAM to find an initial basic feasible solution and an algorithm of method NBSEM through its flowchart and the results obtained therein are to be given.
BOOKS


BIBLIOGRAPHY


15. Castelli, Lorenzo, "Scheduling multimodal transportation systems traffic and transportation system analysis" European J. Oper Res. 155 No.3 pp. 603-615 (2004).


