

# A STUDY ON THE SOLUTION APPROACH FOR THE LOCATION-ROUTING PROBLEM WITH BACKHAULS

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## ABSTRACT

LOCATION-ROUTING PROBLEM (LRP) DETERMINES THE NUMBER, LOCATIONS OF DEPOTS (WAREHOUSES OR DISTRIBUTION CENTERS) AND THE CORRESPONDING ROUTING SEQUENCE FOR CUSTOMERS SERVED BY EACH DEPOT. LRP INTEGRATES BOTH LOCATION-ALLOCATION AND GENERAL ROUTING PROBLEMS, AND IS HENCE VERY HARD TO SOLVE TO OPTIMALITY. ROUTING PROBLEMS WITH BACKHAUL ARE REALISTIC AND USUALLY DISCUSSED IN THE LITERATURE. HOWEVER, TO THE BEST OF OUR KNOWLEDGE, WE HAVE NOT SEEN ANY ARTICLE CONSIDERING BOTH LOCATION AND ROUTING PROBLEM WITH BACKHAUL SIMULTANEOUSLY. THIS RESEARCH THEREFORE STUDIES THE SOLUTION METHOD FOR SOLVING THE LRP WITH BACKHAULS (LRPB). A SIMULATED ANNEALING (SA) HEURISTIC APPROACH IS DEVELOPED FIRST TO SOLVE THE LRP. THIS SA ALGORITHM IS LATER USED AS THE BASE AND IS MODIFIED TO SOLVE THE LRPB. FROM THE RESULTS OF SOLVING TEST PROBLEMS FROM THE LITERATURE AND DESIGNED IN THIS STUDY, IT CAN BE OBSERVED THAT THE PROPOSED SOLUTION METHOD PERFORMED QUITE WELL.

Keywords : LOCATION-ROUTING PROBLEM, SIMULATED ANNEALING, LOCATION-ROUTING PROBLEM WITH BACKHAULS.

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