

THE OPTIMAL PATH OF THE ROAD-NETWORK IN SRI LANKA

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In optimization theory, finding the optimal path when the origin and the destination are given is said to be "the shortest path problem".

In this report, we analyze the existing road-network in Sri Lanka and suggest optimal paths to passengers using the public motor transport system to travel from Kandy to any other district capital, considering distance, time, and cost factors, separately.

To solve the problem, we formulate it as a linear programming problem, where the objective function is considered as the total traveling distance, time, or cost. Due to the complexity of this linear model, the dual problem is considered instead. Based on the dual problem, the Dijkstra's algorithm is developed, and hence the solution is obtained to the shortest path problem. A computer software package developed by G.B. Dantzig and M.N. Thapa is used to run the Dijkstra's algorithm.

