



Samuel Amoako
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Route Assignment Problem

Assignment of Trucks to Routes: A case study: Latex
Foam Rubber Products Limited, Kumasi-Ghana.

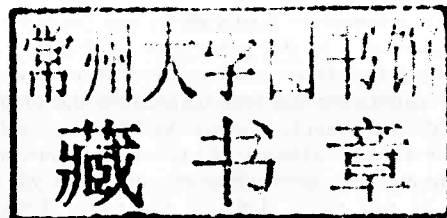


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CHAPTER ONE

INTRODUCTION

The problem of distributing goods from depots to consumers plays an important role in the management of many distribution systems, and therefore when it is programmed efficiently it may yield significant savings. In a typical distribution system, trucks provide delivery and pick-up services to customers that are scattered geographically in a given area. In many of its applications, the common objective of distribution is to find a set of routes for such trucks, satisfying a variety of constraints, so as to minimize the total distribution cost.

Most of the manufacturing companies in Ghana utilize trucks to transport their products to their customers. The general problem in such a situation is how to assign a particular truck to a route to minimize the total transportation cost whilst satisfying route and the available constraints to serve the company's customers with the demand for some commodity. The Truck Assignment Problem, which is one of the logistics network problems, concerns the determination of the type of truck to be assigned to a particular route to minimize the total number of gallons of fuel required per trip.

In this work we use a solution procedure based on Munkres Assignment Algorithm for optimal assignment of non-homogenous fleet of trucks to a given set of routes, where Latex Foam Rubber Products Limited-Kumasi, distributes its products to its customers.

1.1. THE ASSIGNMENT PROBLEM

The problem of assigning resources such as vehicles to task over time arises in a number of applications in transportation. In the field of freight transportation, truckload motor carriers, railways and shipping companies have to manage fleets of containers (trucks, boxcars) that move one load at a time, with orders arriving continuously over time. In the passenger arena, taxi companies and companies that manage fleets of business jets have to assign vehicles (taxicabs or jets) to move customers from one location to the next (Michael Z. Spivey and Warren Powell, 2003). Ahuja, Magnanti and Orlin (Hartvigsen et al., 1999) provide an excellent review of applications of the assignment problem. Among the applications they listed are personnel assignments, scheduling on parallel machines, pairing stereo speakers and vehicle and crew scheduling. Other applications include posting military servicemen, airline commuting and classroom assignment.