

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**DETERMINING THE SHORTEST PATH FOR
INNER TRANSPORTATION IN WAREHOUSE BY
DYNAMIC PROGRAMMING METHOD**

(P49S19)

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

This study was conducted to determine the shortest path for an order picker to collect all of the ordered items in a warehouse. This study focusing only on one forklift. Dynamic Programming Method was chosen to conduct this study in order to solve the shortest path problem. The shortest path problem has an optimal substructure so it is suitable to solve by Dynamic Programming since it is a method that break complex problems into simple subproblems. Few problems faced in the warehouse are such as the order pickers have a hard time in finding the shortest path to collect the order items. Next, the picking time is limited which all of the customers' orders have to be picked during normal working hours only. Due to this, the main objective of this study is to determine the shortest path to be passed to collect all of the customers' orders in the warehouse within normal working hours. There are four stages involved in this study which are the brief description of Dynamic Programming Method, analysis of data, find the shortest path by using Dynamic Programming Method and performance evaluation using Microsoft Excel. For the process of finding the results, the layout of the warehouse is executed into the *distance matrix table* for better understanding. The shortest route distance is calculated by manual calculation and a system in Microsoft Excel. This study helps to minimize the costs involved in transportation in the warehouse.