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Geographic Information System (GIS) modeling approach to determine the most efficient delivery routes for fresh product using real time data

Mohammad Abousaeidi
Islamic Azad University, Iran

This study involves the adoption of the Geographic Information System (GIS) modelling approach to determine the quickest routes for fresh vegetable delivery. During transport, fresh vegetables mainly deteriorate on account of temperature and delivery time. Nonetheless, little attention has been directed to transportation issues in most areas within Kuala Lumpur. In addition, perishable food normally has a short shelf life, thus timely delivery significantly affects delivery costs. Therefore, selecting efficient routes would consequently reduce the total transportation costs. This study includes a review of the main factors that lead to the deterioration of fresh vegetables in tropical countries such as Malaysia. The regression model applied in this study to determine the parameters that affect route selection with respect to the fastest delivery of fresh vegetables is also presented. With the goal of realizing the shortest time for delivery route planning, impedance functions will be integrated by taking into account the parameters emphasized in this study. For the purpose of this research, ArcGIS software was adopted to solve the problem of complex networks. The final output is a map of optimal routes with the best drive times based on variables derived from the regression analysis. GPS has recently become available for routing applications. Because it provides real-time spatial and time measurements, it has an increasing use in conducting different transportation studies. This article presents the application of GPS in collecting travel time, speed, and delay information of major roads. When combined with GIS (geographic information systems), GPS data can be matched with spatial map features such as highways and roads for monitoring traffic conditions on those links.

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