

A Framework to Support Automobile Maintenance Decisions in Militaries Using Analytic Hierarchy Process

VL De Silva^{1#}, C Perera² and D Nishanka¹

¹General sir John Kotelawala Defence University

²Sri Lanka Institute of Information Technology, Malabe

#virajdesilva@kdu.ac.lk

The performance and reliability of the car has greatly affected the smooth functioning of the military system. The army has a large fleet of vehicles, including multi-purpose vehicles. However, a military organization cannot meet the maintenance/maintenance requirements of its fleet simultaneously, therefore maintenance must be given priority. In addition, military organizations do not have sufficient resources to handle all internal maintenance, and hence some maintenance must be outsourced. However, the military's expectations for outsourcing are very different from for-profit commercial companies, therefore determining the right maintenance activities is critical, but also challenging. This paper uses the Analytic Hierarchy Method (AHP) to develop a framework to support automotive maintenance decisions. The framework provides a simple platform for maintaining priorities and selecting the best maintenance method. In the proposed method, maintenance priority determination is based on car criticality. Criteria for maintenance priority and selection of maintenance methods are selected from previous literature. Then AHP was used to calculate their relative importance. Finally, two scoring models were developed to calculate car criticality and to select maintenance methods. The simplicity of the score format makes it easy for users to use, and the digital results enable maintenance personnel to make decisions quickly and intelligently.

Keywords: *automobile maintenance, decision support framework, maintenance prioritization, best maintenance approach, analytic hierarchy process*