

An Analytical Method for Maintenance Cost Estimating Relationships of Helicopters Using Linear Programming

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Abstract : Estimating maintenance cost is crucial in defense management because it affects military budgets and availability of equipment. When it comes to estimating maintenance cost of the deployed equipment, time series forecasting can be applied with the actual historical cost data. It is more difficult issue to estimate maintenance cost of new equipment for which the actual costs are not provided. In this underlying context, this study proposes an analytical method for maintenance cost estimating relationships (CERs) development of helicopters using linear programming. The CERs can be applied to a new helicopter because they use non-cost independent variables such as the number of engines, the empty weight and so on. In the Republic of Korea, the maintenance cost of new equipment has been usually estimated by reflecting maintenance cost to unit price ratio of the legacy equipment. This study confirms that the CERs perform well for the 10 types of airmobile helicopters in terms of mean absolute percentage error by applying leave-one-out cross-validation. The suggested method is very useful to estimate the maintenance cost of new equipment and can help in the affordability assessment of acquisition program portfolios for total life cycle systems management.

Keywords : affordability analysis, cost estimating relationship, helicopter, linear programming, maintenance cost

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