The Application of Data Mining Technique to Forecast the Parts Requirements for Military Depot

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ABSTRACT

To manage and improve the availability for military equipment efficiently, a complete repair system and more rapid supply activities are the most critical factors. Lack of spare parts to support the system will strongly delay the turn around time (TAT) for a repair process. Nevertheless, a large number of inventory levels to maintain parts acquisition will not only raise the handling cost but also keep lots of circulating capital in stock. Thus, how to give an accurate forecast on parts consumption to make appropriate inventory policies is the major essential considering issue for the depot vendors nowadays. This research is taking the Depot-Level Repair (D/L) System for example to explore the use of the Data Mining technique and discuss how it to be applied to a state-operate vendor, the H Company. The purpose is to find out the relations of Support and Confidence between the failure mode and replaced parts pattern by exercising Association Rules on its repair records. In the end, a forecasting model for parts requirement in the depot system will be provided and evaluated in accordance with the relations and the failure times forecast. I hope this model can be helpful for the aerospace related venders to improve their inventory system and give support to their repair activities. By the way, the ability of predicting the requirement on parts earlier makes the lead time more available for vendors to choose an efficient system to reduce the total TAT and promote the supportability for the system.

Keywords : Data Mining ; Depot-Level Repair(D/L) ; Turn Around Time (TAT) ; Association Rules (AR) ; Support ; Confidence

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