

A Dynamic Programming Approach to Replacement of Transport Vehicles in B

Every organisation has an objective to optimise the utility function of its available operational assets. For commercial vehicle transport operators, the goal is to operate the vehicles for as long as they can make net contribution to the organisation's corporate objective. Hence, when these vehicles are replaced becomes an issue for strategic decision making. Unfortunately many of the commercial bus transport companies lack the skill to undertake the required empirical evaluation necessary to provide objective data and information for making the vehicle replacement decisions. This study was therefore an effort to bridge this gap in knowledge. Only two out of the fourteen transporter companies of interest operating in Benin City, Edo State, Nigeria agreed to provide the required data for the study which covered the period 2008 to 2013 and for Toyota brand of buses only. The data was subjected to backward recursive dynamic programming analysis. The results showed that the four years fixed-age vehicle replacement policy employed by commercial bus transport companies in Benin City was optimum only for the Toyota high roof types of buses. The study thus recommends that commercial vehicle owners/operators should endeavour to keep reliable, relevant and up to records of their vehicles. While it is advocated that adequate and continuous training of key staff on equipment replacement should also be encouraged, operators of mass-transit systems can seek the assistance of Operations Research experts in order to enhance their decisions regarding vehicle replacement policies.

Keywords :

Backward recursive; dynamic programming; minimisation model; toyota bus; vehicle replacement; replacement policy; replacement strategy.