

## **A model of vehicle replacement time with overloading cost constraint**

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Vehicle replacement time depends mainly on the rate of deterioration. Overloading has been found to be a significant factor of deterioration and cost accumulation. We examined the impact of overloading on vehicle deterioration and its total costs and hence the replacement time of vehicle fleets in Nigeria. The research design was a mixture of field survey and a longitudinal study of vehicle fleets of three transport companies in Benin City, Nigeria. The population of the study consisted of all interstate transport companies in Benin City. Multi-stage sampling was used to select the three transport companies studied. An overloading factor was developed and used to estimate the cost of operating overloaded vehicles. Research data were analysed using discrete dynamic programming, which was implemented using computer software developed through Pascal Programming. Results indicate that overloading significantly precipitates vehicle deterioration, increases operating and total cost and thus affects replacement time of vehicles.