

## Mathematical Modelling for Diesel Consumption of Articulated Vehicle Used in Oyo State, Nigeria

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**Abstract :** Since the usefulness of articulated vehicles is becoming more apparent and the diesel consumption of these vehicles constitutes a major portion of operating costs, development of mathematical model for their diesel consumption is of a great importance. Therefore, the present work developed a quantitative relationship between diesel consumption and vehicle age, annual use and cost of maintenance of the different makes of articulated vehicles. The vehicles selected for the study were FIAT 682 T3, IVECO 19036 and M.A.N. Diesel 19.240. The operating parameters for 90 vehicles of different age groups were recorded. Multiple regression models for diesel consumption of articulated vehicles of different makes were developed. From the analysis of results, it can be concluded that as the age of the vehicles increases, the diesel consumption increases. Also, as the diesel consumption increases, the cost of maintenance increases and there is a subsequent decrease in annual use. Moreover, FIAT 682 T3 and IVECO 19036 should be replaced at 7 years of age while M.A.N diesel should be replaced at 8 years of age. These are the ages where the diesel consumption becomes abnormal and uneconomical and they are points of optimal overhaul.

**Keywords :** vehicle, overhaul, age, uneconomical, diesel, consumption

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