Chapter 7
Machine Learning in Estimating Vehicular Efficiency With Special Focus on Customer Acquisition and Retention

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ABSTRACT

The estimation of vehicular efficiency is highly significant in enhancing the sustainability of transportation and optimizing the allocation of resources. Machine learning algorithms are extensively applied in the domain of vehicular networks with a special focus on enriching vehicular potency. In this research work, a machine learning-based estimation model is developed for customer relationship management. The association between vehicular efficiency and customer acquisition cum retention is studied exclusively in this chapter. This work is indeed an intersection of machine learning algorithms, vehicular efficiency calculation, and customer relationship

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management. The interventions of the customer-oriented strategies with vehicular efficiency are explored in this study by determining the influence of customer-oriented metrics over vehicular efficiency. The results and the insights acquired from this work will certainly facilitate the policymakers and decision-makers in comprehending a comprehensive model integrating customer-centered metrics.

1. INTRODUCTION

The advancing technology is bringing a massive transformation in the automotive industry with an increasing prominence on sustainability. The intervention of machine learning is scaling this industrial sector to elevated levels as it is a significant tool in increasing vehicular efficiency. In the context of an intelligent transportation system vehicular efficiency refers to the effective utilization of the resources with the objective of mitigating emissions, control of traffic congestion, ensuring safety and minimizing the consumption of energy and functional costs. The efficacy of these vehicles is calculated by several factors associated with the characteristics of the vehicles, environmental aspects, operational data, sensor data, and other external factors. As the computation of vehicular efficacy depends on large-scale of data sets, machine learning algorithms are the optimal choice in handling these voluminous data. The competency of the vehicles shall be enhanced by leveraging different algorithms of machine learning which are more competent than the traditional approaches.

Determination of vehicular efficiency is highly a significant phenomenon for the stakeholder's group comprising manufacturers, consumers, and policymakers. The whole framework of the smart transportation system is customer-centered as the choice of the vehicular networks is decided by the satisfaction rate of the consumers. From the perspective of manufacturers, higher efficiency and compliance with environmental standards are key features of vehicular networks. The consumers expect high quality with low-cost benefits and the policy makers are bound to economic and environmental efficiency. The efficiency of the machine learning algorithms has influenced the researchers to employ it in making analysis with respect to several aspects associated with smart intelligent systems. Machine learning is basically a subset of artificial intelligence and it works on the principle of training and testing the data sets to make optimal predictions, estimations and evaluations of vehicular efficiency. These algorithms shall be employed in developing models pertinent to prediction of vehicle failures, estimation of fuel efficiency, carbon emissions and battery usage. This research work intersects not just the machine learning with vehicular efficiency but also explores the possibilities of integrating the aspects of customer acquisition and retention.