

FREIGHT TRANSPORT MODE CHOICE USING A BINARY LOGIT MODEL

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ABSTRACT

This study provides the first description of freight mode choice using the SARBAGITA area in Bali as a case study. A binary logit model was built to analyze the important factors influencing the choice between pick-up/box cars and medium/large trucks. This study found that the odds that drivers aged between 31 and 40 years old, elementary school as driver educational qualification, transported mining results, transported forest products and travel distance will use pick-up/box cars were 3.82, 6.54, 8.78, 18.08, and 1.05 times more likely than these of medium and large trucks. Meanwhile, the odds that freight transport vehicles owned by private, driver income was equal to regional minimum wage, and an average weight of transported goods were less than 5 tons will use pick-up/box cars were 34%, 28%, and 1% less likely than these of medium and large trucks.

Keywords: fatal road accidents; logistic regression; motorcycle

INTRODUCTION

The choice of transport mode is determined by the interaction between transport and shipping companies (Holguin-Veras et.al., 2011). In the case of private fleets, shippers also act as logistics carriers. Freight transport is often restricted from moving on certain road networks. Movement restrictions can affect the efficiency and effectiveness of logistics transport. The more efficient and effective the logistics transportation method, the lower the price of raw materials. Logistics transport is closely linked to the road network, especially in delivery destination areas (Kalahasthi, et.al, 2022).

Understanding the factors that influence the decision to use freight vehicle type(s) (Khakdaman et al., 2022) is important to support infrastructure planning decisions and key analysis in urban road traffic. These factors include place of origin and destination, type of transport, and type of industry. The shipping line and the carrier are responsible for making decisions about the choice of mode and type of vehicle. The shipper produces the goods, and the carrier is responsible for transporting and delivering the goods. Bali Province, as a strategic province in terms of logistics distribution, especially towards eastern Indonesia, has many infrastructure-related logistics distribution issues that have not been researched. The main parameter involved in logistics distribution is the travel time of goods. These parameters are related to factors such as the behavior of logistics transport operators, the infrastructure of the road network, and the choice of logistics transport mode. Therefore, it is necessary to study how a logistics/transportation company chooses the type of vehicle to transport goods in urban areas and the impact of logistics traffic flow on urban traffic efficiency.

Therefore, this study aims to analyze the choice behavior of freight/logistics vehicles in urban areas of Bali province. The purpose of this study is to analyze the choice behavior of freight vehicles in the urban area of Bali province, which is useful in enriching the logistics database and estimating the transportation system model. The benefits that can be achieved through practical application include contributing to stakeholders (executive and legislative at the