

A MODEL BASED ON CUSTOMER SATISFACTION TO PREDICT ROUTE-WISE LOGISTIC COSTS FOR BAKERY PRODUCT SUPPLY CHAINS

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Efficient logistics management is crucial for bakery product supply chains due to the perishability of the products and the need for timely delivery. Traditional logistics cost prediction models often fail to incorporate customer satisfaction factors and to utilize them for long-term business success and competitive advantage. This study introduces a customer satisfaction-based model for predicting route-wise logistics costs by integrating customer-centric variables with operational metrics. The proposed model considers key cost components such as transportation, warehousing, inventory management, regulatory compliance, and environmental sustainability. It utilizes five types of data: route-wise expected logistics costs, actual logistics costs, profitability, and customer complaint data. Actual costs are taken as the previous time (Week/Month/Year), average route cost and expected logistics costs are determined by removing additional fuel costs, claim costs, etc. The model ensures that customer satisfaction is a core component by analyzing route-specific customer complaints over time and converting them into a satisfaction index. Route-wise cost variability and cost performance index (CPI) were used to construct the predictive model by considering the best performance of cost considering $CPI = 1$ in the logistic cost predictions. Data analysis was conducted using Microsoft Excel to inform future logistics cost prediction decisions by developing optimistic and pessimistic models from the company owner's perspective, thereby ensuring the model's stability. A case study was conducted and the mean accuracy of the results generated by the MATLAB software was compared with the actual logistic costs, and it was 96.08% for pessimistic cost predictions and 97.13% for optimistic cost predictions. This study presents a reliable logistic cost prediction model, assuming constant demand, and offers valuable insights for future decision-making in cost management and optimization within the bakery product supply chain.

Keywords: Customer satisfaction, Logistic costs, Optimistic model, Pessimistic model