IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, August 2025
Impact Factor: 7.67

# BigMart Sales Forecasting Using Decision Tree Regression for Smart Inventory Management

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**Abstract**: *In modern retail environments, especially in large supermarket chains like Big Mart, maintaining detailed sales records of individual products has become a standard practice. This sales data plays a critical role in anticipating customer demand and optimizing inventory management strategies. By analyzing large volumes of historical data stored in centralized warehouses, businesses can uncover patterns, trends, and anomalies that help them make informed, data-driven decisions.This study presents a machine learning approach for sales forecasting using Decision Tree Regression, trained on historical sales data from Big Mart. The model effectively captures complex relationships between various sales factors and demonstrates superior accuracy when compared to traditional regression techniques. The results indicate that Decision Tree Regression is a reliable and efficient method for predicting future sales, ultimately supporting better demand forecasting, resource planning, and profitability in the retail sector.*

**Keywords**: Sales Prediction, Big Mart Dataset, Machine Learning, Decision Tree Regression, Forecasting, Inventory Management, Data Mining, Retail Analytics, Predictive Modelling



DOI: 10.48175/568