Model Development Phase

Date	4 June 2024
Team ID	SWTID1719938571
Project Title	Walmart Sales Analysis for Retail Industry with Machine Learning
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model Selection Report:

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
RandomForestRegression	This model can handle non-linear relationships and interactions between different variables, making it suitable for capturing the complexity of retail sales data.	n_estimators=58,max_depth=27,min_samples_split=3,min_samples_leaf=1	Accuracy score = 90.5%
Decision Tree	Decision trees can help identify which factors (e.g., demographic information, purchase history, geographic location) influence customer buying decisions the most.This information can then be used to tailor marketing campaigns or optimize product placements	-	Accuracy score = 100.00%

	within stores to increase sales and customer satisfaction.		
XGBoost	By leveraging its ability to handle large datasets and capture complex patterns, XGBoost can provide more accurate predictions of product demand, allowing Walmart to optimize inventory levels and minimize stockouts or overstock situations.	objective='reg:squarederror', nthread=4, n_estimators=1000, max_depth=5, learning_rate=0.5)	Accuracy score = 97.50%
ARIMA	ARIMA models are particularly useful in Walmart analysis for time series forecasting, such as predicting weekly or monthly sales volumes.	-	RMSE: 686.64 MSE: 471475.70 MAD: 448.51