**Model Performance Measures**

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| **Model** | **Dataset** | **Multi-Nominal LR** | **Decision Trees/CART** | **Random Forest** |
| Accuracy | Train | 88.27 | 88.27 | 98.27 |
| Test | 88.19 | 88.28 | 87.55 |

**Observation:** Decision tress performs better in terms of accuracy of overall model. The stability in train & test dataset is equal and model performs better**.** Random Forest has highest accuracy in train dataset but in test it is dropping by ~10%

**Business Interpretation & Recommendation**

1. The dataset is about inventory of a firm. The data consists of 7,853 rows with 8 columns. The data spans from 2007 to 2010 timeframe where the business seems to be steadily growing. The objective of the exercise is to find the optimal ship mode for the order placed by the customers.
2. ~ 75% of the orders were placed by ‘Regular Air’ shipping mode which also suggests that customers are more inclined towards Regular Air travel shipping mode. The least preferred is Express Air shipping mode. The reason could be high charges levied towards Express Air travel which takes lesser time to deliver the orders.
3. The above boxplots Ship.Mode Vs Sales & Order.Quantity shows following observations
4. Sales numbers are higher when using Delivery\_Truck as the shipping mode. It may be due to Delivery truck can be used to deliver large quantities of the orders
5. The median order quantity for all the 3 modes of Ship\_mode. It suggests that irrespective of any shipping mode the median order quantity remains same.
6. Regular Air Shipping mode has the highest order followed by Delivery Truck. Express Air Shipping mode has lowest orders. It may be due to higher charges levied on Express modes.
7. Paper has been purchased more followed by Binders , Telephones & office furnishings
8. Global High-Back Leather has been purchased more followed by Conference Tables & Doorstop
9. Office Machines are purchased more followed by Tables, Telephones & Communication
10. Regular Air has highest sales followed by Delivery Truck.
11. Thursday has the higher order quantity across 2007-2010.
12. Sales are increasing YoY. Wednesday has higher average sales across the Year. Weekend sales are higher when compared to other days
13. Decision Trees perform better in terms of accuracy & stability on train & test dataset.
14. The Business teams can utilize the Decision Tree model for performing shipping mode for orders based on historical data. This will reduce cost incurred on the shipping modes.