**AIRLINE DATASET:**

Dummy variables created = 12 Columns as months

**Forecasting using model based methods**

|  |  |
| --- | --- |
| **Model** | **RMSE VALUES** |
| **Linear Model** | 56.736043 |
| **Exponential** | 47.828735 |
| **Quadratic** | 54.281178 |
| **Additive seasonality** | 132.987403 |
| **Additive Seasonality Quadratic** | 35.735603 |
| **Multiplicative Seasonality** | 138.596157 |
| **Multiplicative Additive Seasonality** | 11.874926 |

# FORECASTING USING DATA DRIVEN MODEL

|  |  |
| --- | --- |
| **Model** | **RMSE VALUES** |
| **Simple Exponential Method** | 54.816332 |
| **Holt method** | 80.640300 |
| **Holt Winter Exponential Smoothing with additive Seasonality and additive Trend** | 8.353736 |
| **Holts Winter Exponential Smoothing with multiplicative seasonality and additive trend** | 14.936489 |
| **ARIMA MODEL** | 22.830 |

# CONCLUSION:

# By performing both Model based approach and Data Driven approach for airline data,Holt Winter Exponential Smoothing with additive Seasonality and additive Trend only gives best RMSE about 8.353736,so we build the final model.

**COCACOLA DATASET:**

Dummy variables created = 4 Columns as Quarter(Q1,Q2,Q3,Q4)

**Forecasting using model based methods**

|  |  |
| --- | --- |
| **Model** | **RMSE VALUES** |
| **Linear Model** | 636.507293 |
| **Exponential** | 493.348648 |
| **Quadratic** | 511.811732 |
| **Additive seasonality** | 1861.870416 |
| **Additive Seasonality Quadratic** | 309.464140 |
| **Multiplicative Seasonality** | 1938.933235 |
| **Multiplicative Additive Seasonality** | 339.187467 |

# FORECASTING USING DATA DRIVEN MODEL

|  |  |
| --- | --- |
| **Model** | **RMSE VALUES** |
| **Simple Exponential Method** | 1011.722780 |
| **Holt method** | 809.711366 |
| **Holt Winter Exponential Smoothing with additive Seasonality and additive Trend** | 366.145696 |
| **Holts Winter Exponential Smoothing with multiplicative seasonality and additive trend** | 145.253345 |
| **ARIMA MODEL** | 157.040 |

## **CONCLUSION:**

## **By performing both Model based approach and Data Driven approach for COCACOLA data,ARIMA only gives best RMSE=157.040,so we build the final model**.