Presentation on Retail Giant Sales Forecast Assignment

Points that are covered:

1. What are the 21 market Segments?
2. Comparison showing the table of values for the coefficient of variation calculated on the profit for the 21 market segments.
3. The reason why a market segment “ABC” is the most profitable market segment
4. Concluding the optimum technique from the flow chart that might work best for the sales forecast.
5. Comparing the sales forecast plots for all the smoothing techniques and their MAPE values.
6. Comparing the sales forecast plots for all the ARIMA techniques and their MAPE values.
7. Conclusions on which technique works the best for the sales forecast and why? Then reason this using the forecast plot and the MAPE values both.

What are the 21 market Segments?

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- 'EU_Corporate', 'EU_Consumer', 'LATAM_Consumer', 'US_Home Office', 'US_Corporate', 'APAC_Home Office', 'US_Consumer', 'Africa_Consumer', 'EMEA_Consumer', 'APAC_Consumer', 'LATAM_Corporate', 'EU_Home Office', 'Canada_Corporate', 'LATAM_Home Office', 'EMEA_Home Office', 'APAC_Corporate', 'Africa_Corporate', 'EMEA_Corporate', 'Canada_Consumer', 'Africa_Home Office', 'Canada_Home Office’.

- Comparison showing the table of values for the coefficient of variation calculated on the profit for the 21 market segments.

	Market_Segment	CoV
0	APAC_Consumer	0.522725
1	APAC_Corporate	0.530051
2	EU_Consumer	0.595215
3	LATAM_Consumer	0.683770
4	EU_Corporate	0.722076
5	LATAM_Corporate	0.882177
6	EU_Home Office	0.938072
7	APAC_Home Office	1.008219
8	US_Consumer	1.010530
9	US_Corporate	1.071829
10	US_Home Office	1.124030
11	LATAM_Home Office	1.169693
12	Canada_Consumer	1.250315
13	Africa_Consumer	1.310351
14	Canada_Corporate	1.786025
15	Africa_Corporate	1.891744
16	Africa_Home Office	2.012937
17	Canada_Home Office	2.369695
18	EMEA_Consumer	2.652495
19	EMEA_Corporate	6.355024
20	EMEA_Home Office	7.732073

- The reason why a market segment “ABC” is the most profitable market segment

- The coefficient of variation (CV) is a statistical measure of the dispersion of data points in a data series around the mean. The coefficient of variation represents the ratio of the standard deviation to the mean, and it is a useful statistic for comparing the degree of variation from one data series to another, even if the means are drastically different from one another.
- As we can see that the lowest CoV is 0.52272. Hence we can infer that the corresponding Market Segment is "APAC_Consumer“. The most profitable Market Segment is APAC_Consumer.

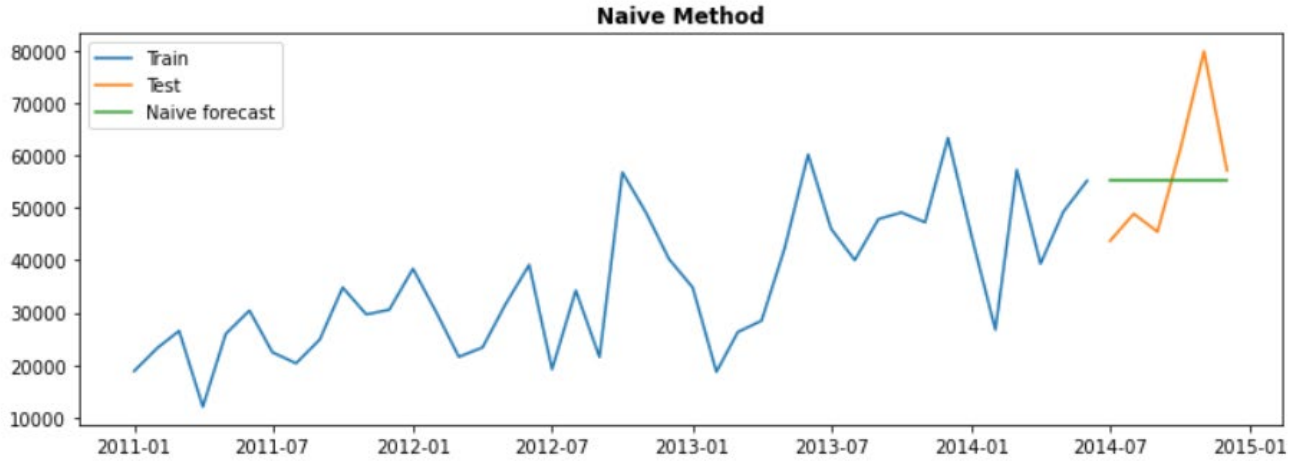
- Concluding the optimum technique from the flow chart that might work best for the sales forecast.

- As From the Smoothing Techniques performed, we can conclude that Holt Winter's Additive Method is giving the better forecast to of the sales for the 6 months, since the predicted sales are closer to the actual sales.
- We could also see that the RMSE and MAPE values is the least among all the methods done above.

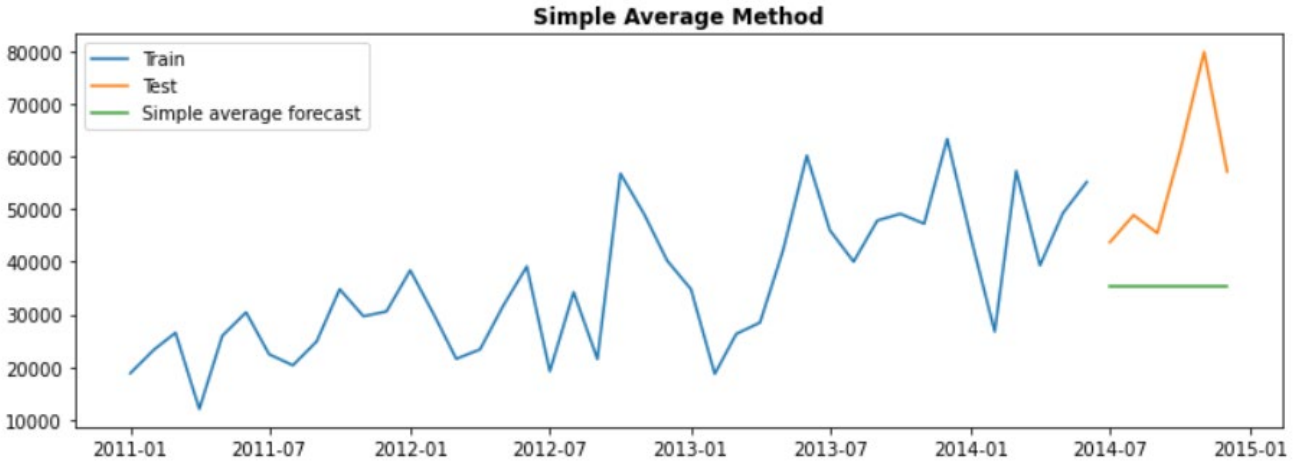
Method	RMSE	MAPE
Naive method	12355.97	17.47
Simple average method	24146.06	34.34
Simple moving average forecast	14756.73	15.82
Simple exponential smoothing forecast	14627.34	15.74
Holt's exponential smoothing method	18976.37	34.57
Holt Winters' additive method	9306.82	10.17
Holt Winters' multiplicative method	9423.23	11.43

- Comparing the sales forecast plots for all the smoothing techniques and their MAPE values.

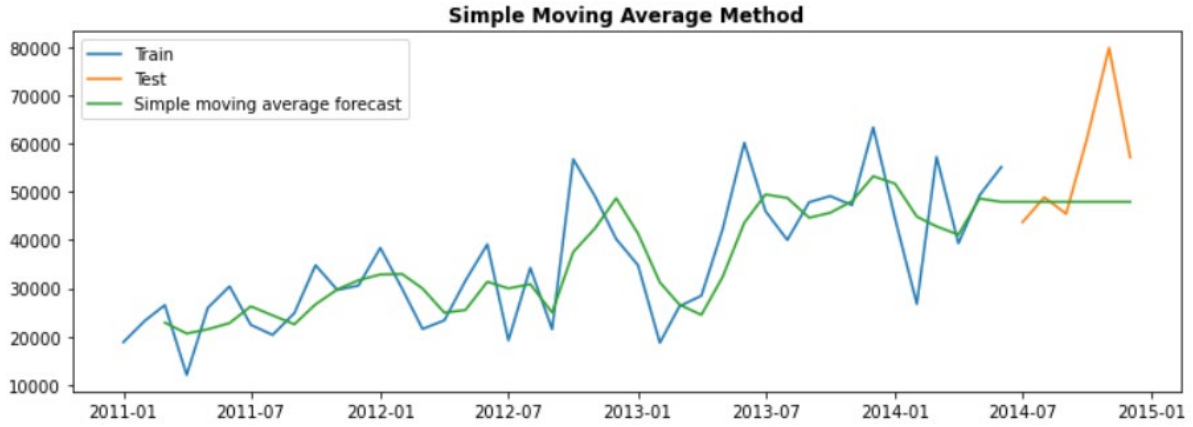
- Naive Method
- MAPE value - 17.47



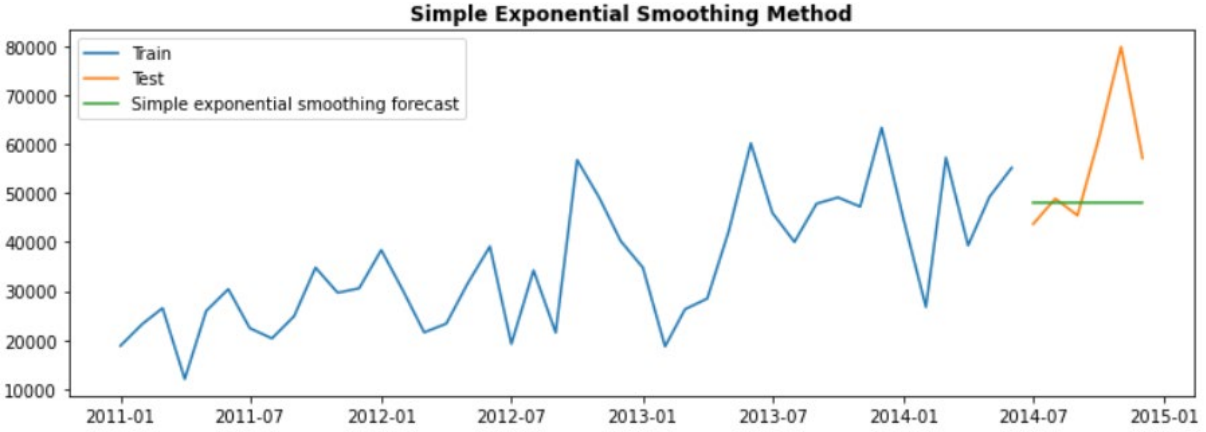
- Simple average method
- MAPE value - 34.34



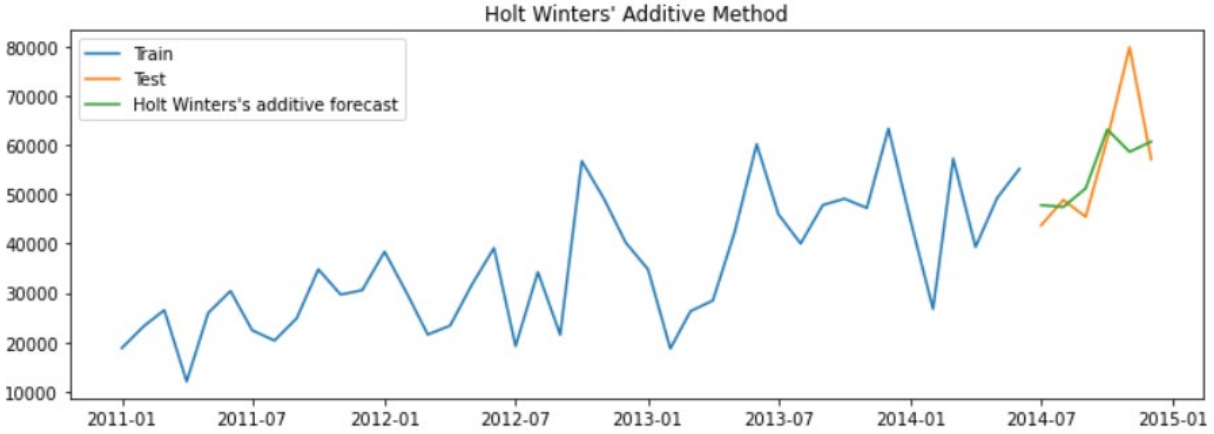
- Simple moving average method
- MAPE value - 15.82



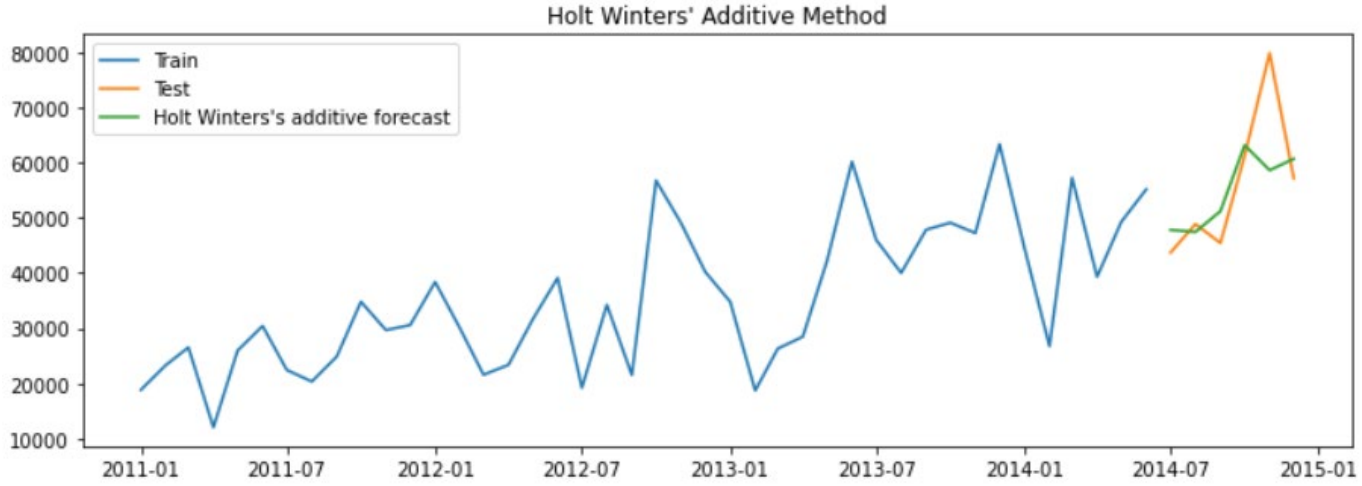
- Simple exponential smoothing
- MAPE value - 15.74



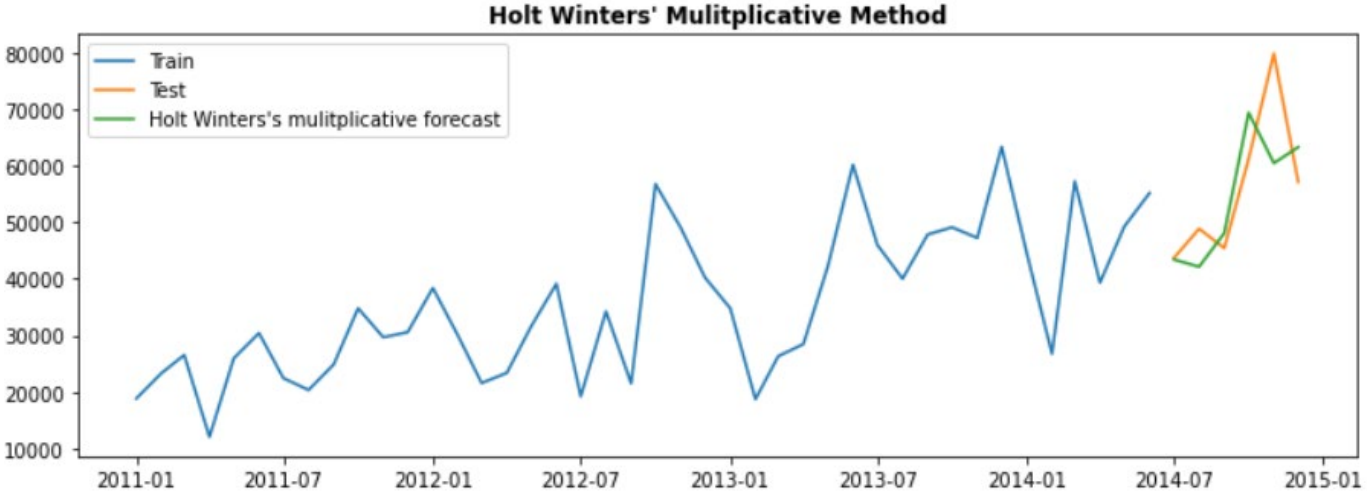
- Holt's Exponential Smoothing
- MAPE value - 34.57



- Holt Winters' additive method
- MAPE value - 10.17

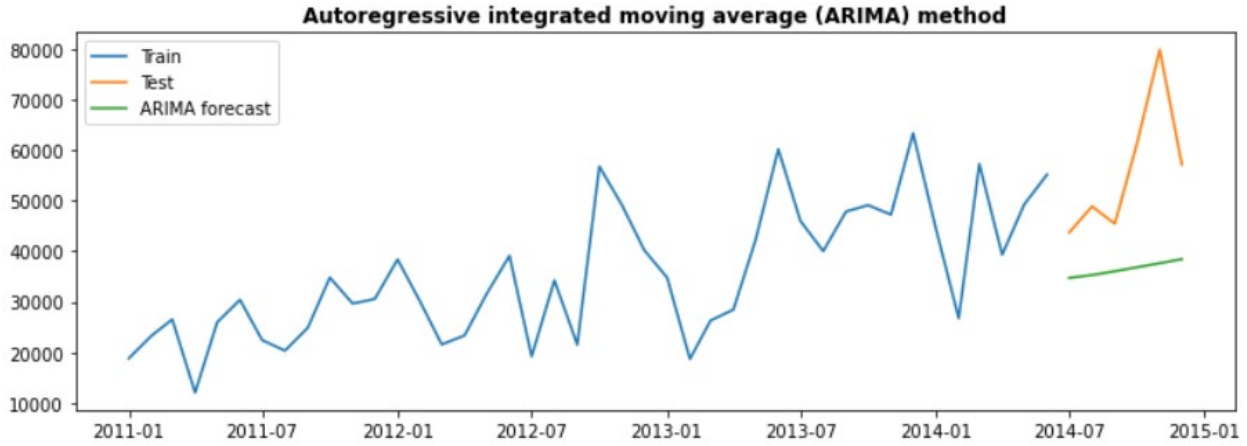


- Holt Winter's multiplicative method
- MAPE value - 11.43



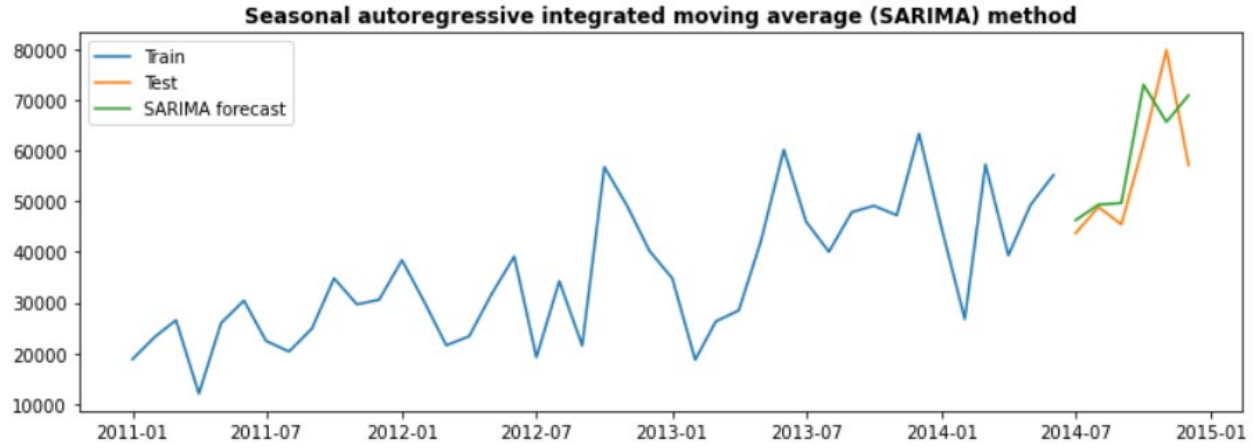
Comparing the sales forecast plots for all the ARIMA techniques and their MAPE values.

- Auto regressive integrated moving average (ARIMA)
- MAPE value - 32.40



- Seasonal auto regressive integrated moving average (SARIMA)

MAPE value - 12.87



- Conclusions on which technique works the best for the sales forecast and why? Then reason this using the forecast plot and the MAPE values both.

- Thus, we can conclude that, Holt Winters additive method is the best forecasting method in the smoothing technique
- And SARIMA - Seasonal Autoregressive Integrated moving average is the best method in ARIMA set of techniques.