

Retail-Giant Sales Forecasting Case Study

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Abstract

Business understanding:

“Global Mart” is an online store super giant having worldwide operations. It takes orders and delivers across the globe and deals with all the major product categories - consumer, corporate & home office.

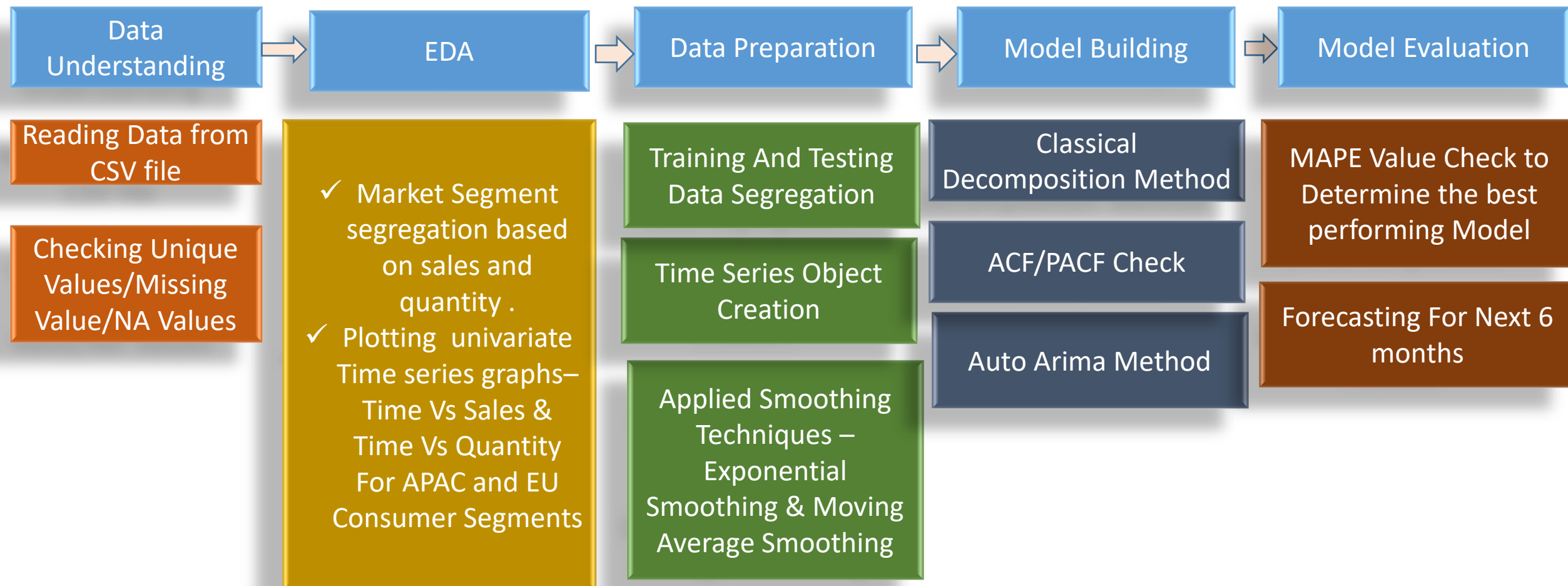
Goal of the analysis:

Now as a sales/operations manager, we want to finalize the plan for the next 6 months. So, we want to forecast the sales and the demand for the next 6 months, that would help us to manage the revenue and inventory accordingly.

- The store caters to 7 different market segments and in 3 major categories. We want to forecast at this granular level, so we subset our data into 21 (7×3) buckets before analyzing these data. As per the problem statement we have taken 2 most profitable (and consistent) segment from these 21 buckets

Problem solving methodology

The Methodology used in solving the problem is highlighted as below:



Data Understanding and preparation

Data Set Consists Of:

- Original Data consists of 24 columns
- We have retained the below columns
 - order date, segment, market, category, sales , quantity and profit

Data Preparation steps:

- Convert the order date into date format
- For each Market segment combination, calculated total profit and quantity.
- COV of the profit is calculated for each market-segment combination.

Identifying Top Two Market Segments

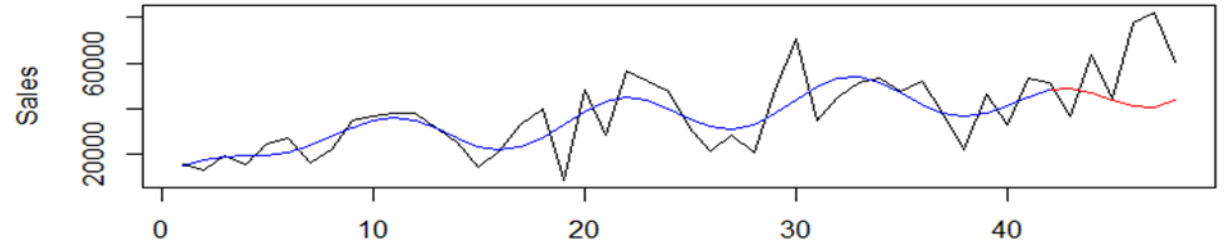
We have aggregated monthly Sales and Quantity to identify top two market segments based on Profit

- ✓ EU and APAC Consumer are the best two performing markets

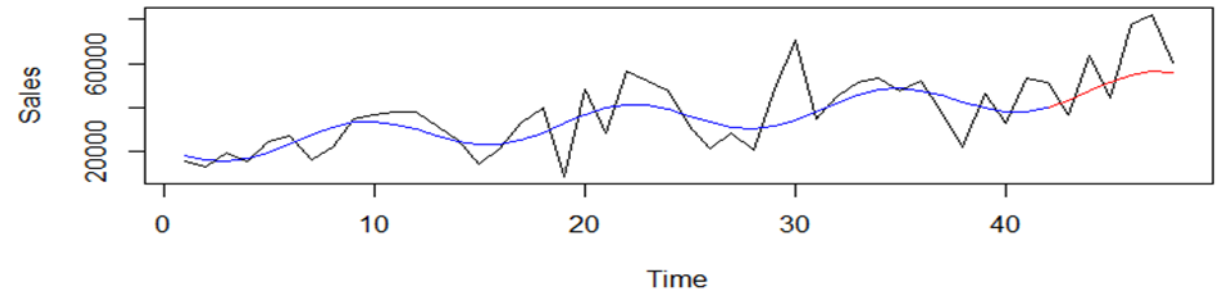
Region	Total Profit	Coefficient Of Variation
APAC Consumer	177389.251	0.6036334
EU Consumer	152355.715	0.6553335

APAC Consumers Sales

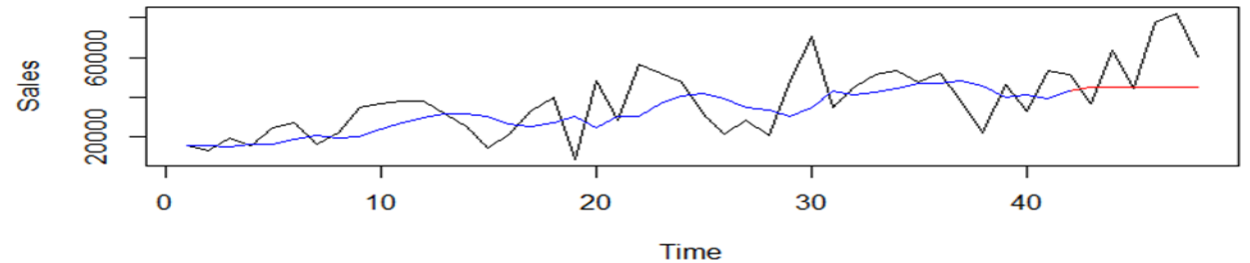
Moving Average -Moving Average MAPE - 31.074



★ Exponential Smoothing – MAPE – 21.22845



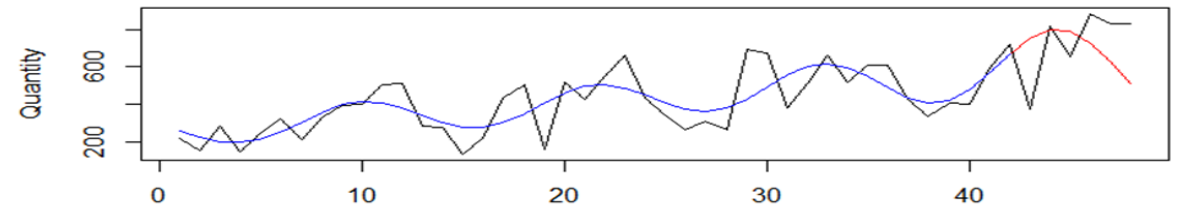
Auto Arima MAPE = 27.68952



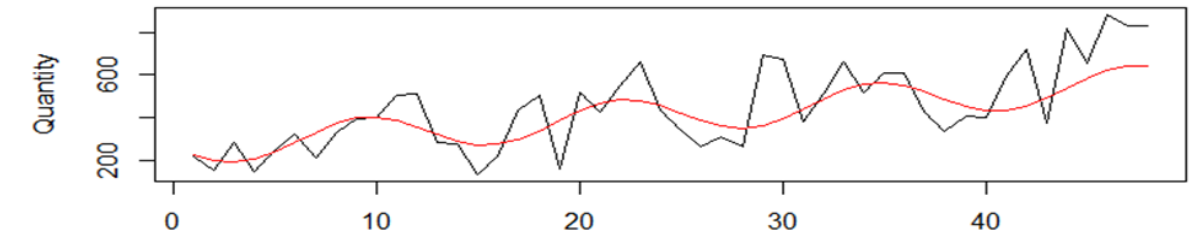
Selected Exponential Smoothing for forecasting as it had the lowest MAPE value

APAC Consumers Quantity

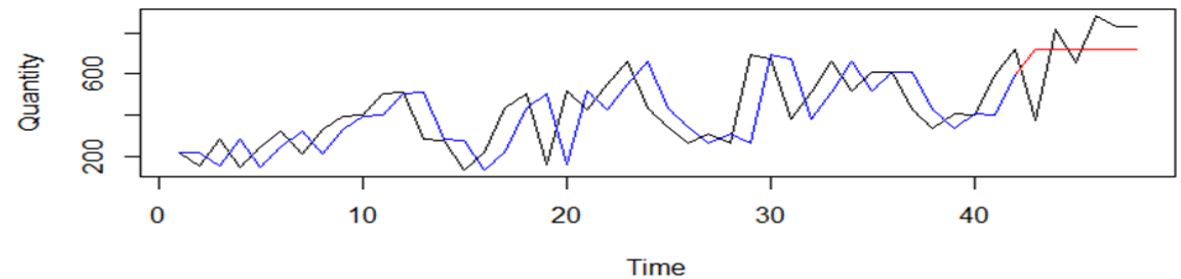
Moving Average -Moving Average MAPE - 33.794



★ Exponential Smoothing – MAPE – 25



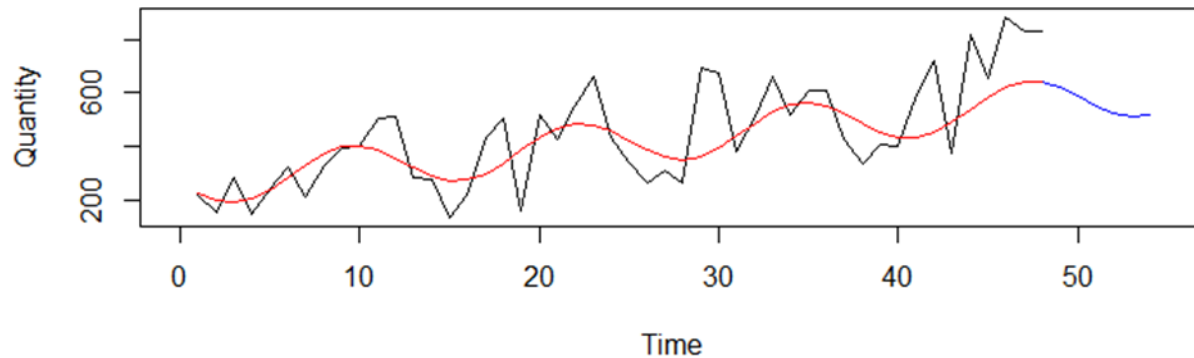
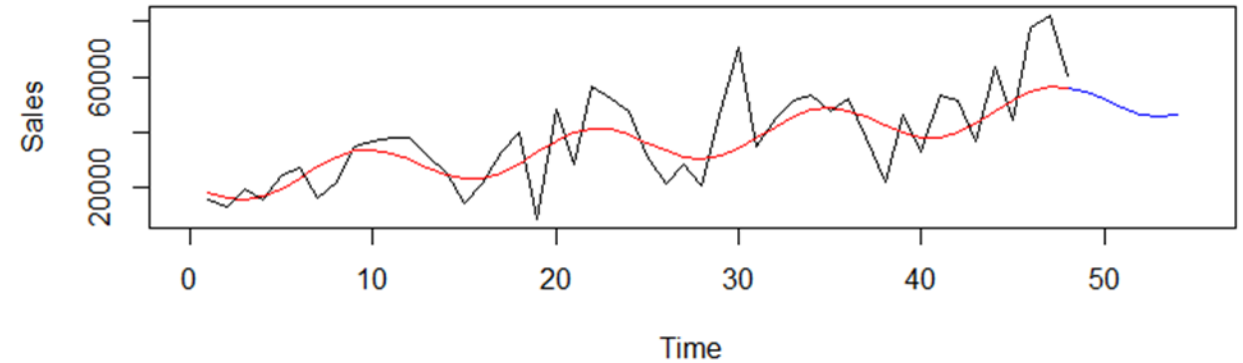
Auto Arima MAPE = 26.24



Selected Exponential Smoothing for forecasting as it had the lowest MAPE value

Forecast - APAC Consumers Sales & Quantity

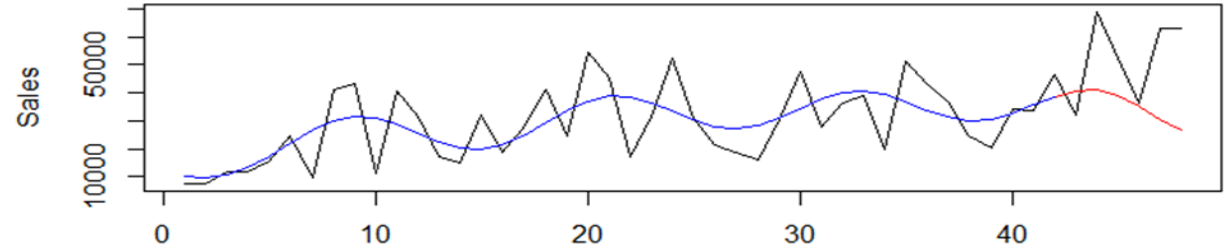
Forecasted - Sales would be hovering between 45K to 55 K



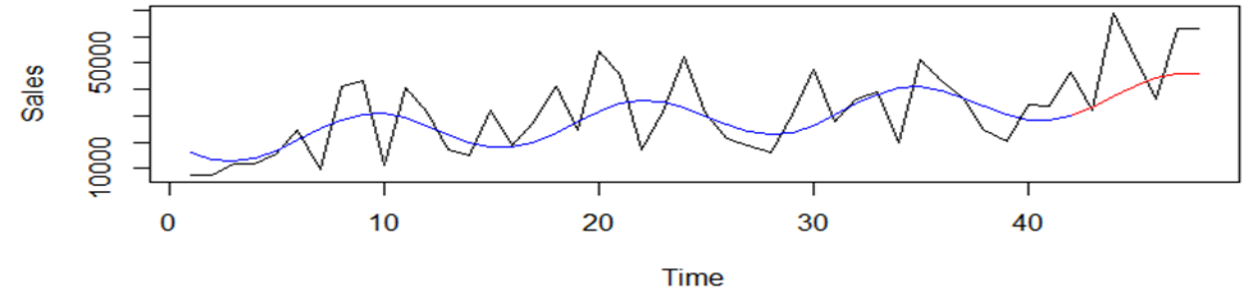
Forecasted Quantity – Hovering Between 500 to 620

EU Consumers Sales

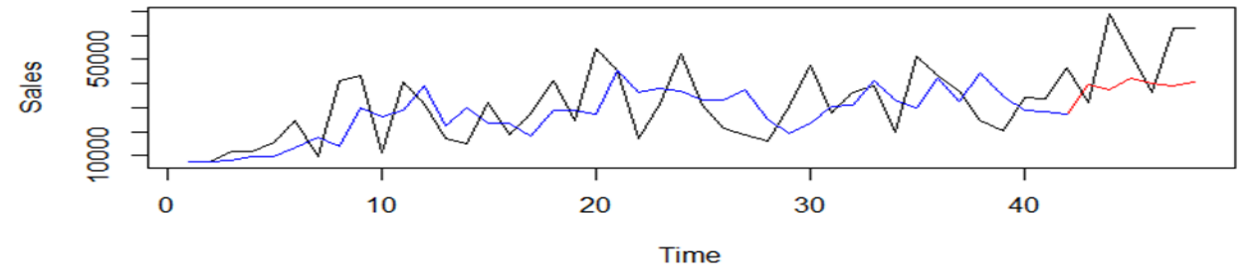
Moving Average -Moving Average MAPE - 34.35



★ Exponential Smoothing – MAPE -24.6



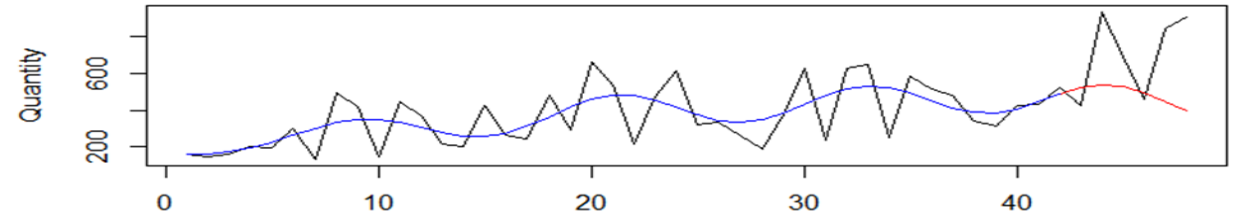
Auto Arima MAPE = 28.92



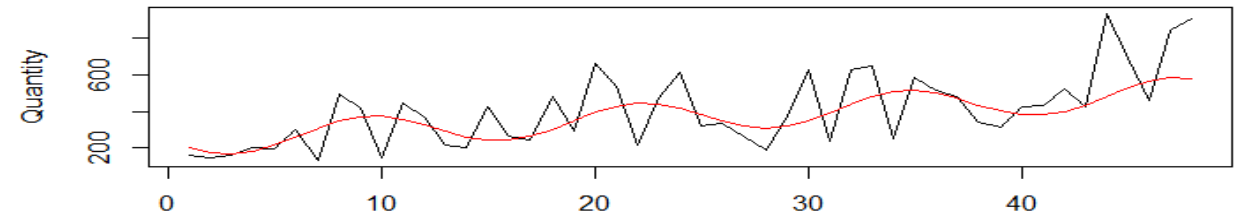
Selected Exponential Smoothing for forecasting as it had the lowest MAPE value

EU Consumers Quantity

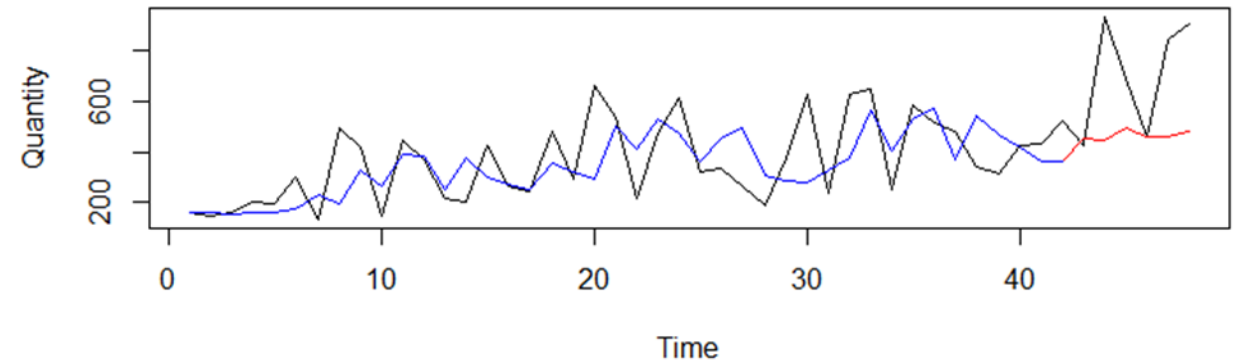
Moving Average -Moving Average MAPE - 33.24



★ Exponential Smoothing – MAPE – 27.4



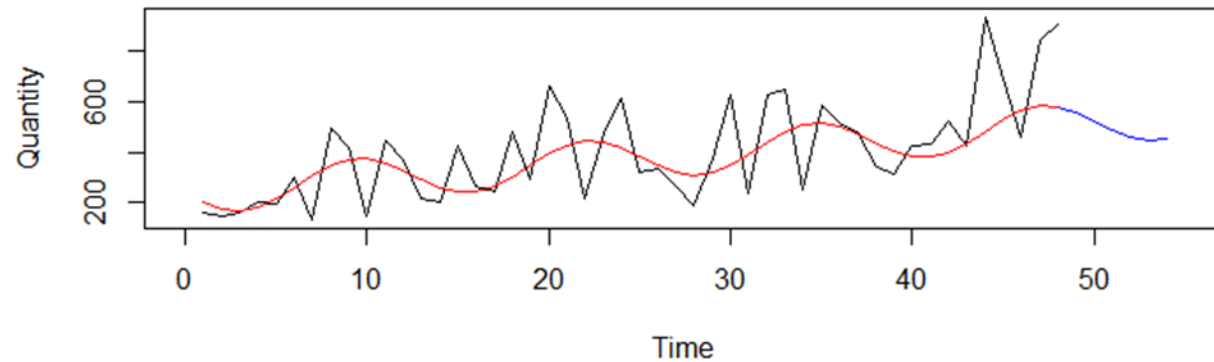
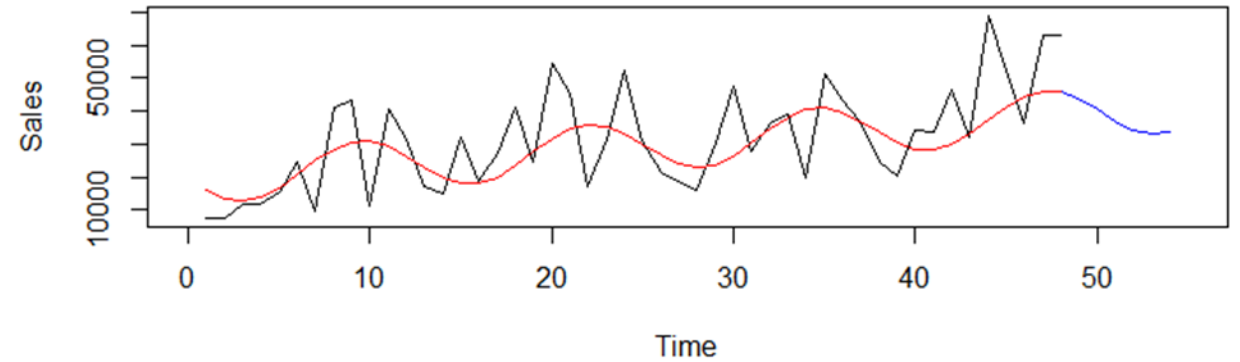
Auto Arima MAPE = 30.13



Selected Exponential Smoothing for forecasting as it had the lowest MAPE value

Forecast - EU Consumers Sales & Quantity

Forecasted - Sales would be hovering around 33K to 43.69 K



Forecasted Quantity hovers between 447 to 557

Recommendations for Revenue/Inventory Management

- Recommendations
 - ✓ Inventory for the top 2 profited segments need to be procured according to the below forecasted values:
 - EU Consumer Demand: Approx 550 to 450 units need to be procured.
 - Looking at the EU forecasted graph , we have downward trend for the next 6 months, so stocks need to be managed accordingly.
 - APAC Consumer Demand : Approx 650 to 500 units need to be procured.
 - Looking at the APAC forecasted graph , we have downward trend for the next 6 months, so stocks need to be managed accordingly.