

Retail-Giant Sales Forecasting Case Study

SUBMISSION

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Abstract

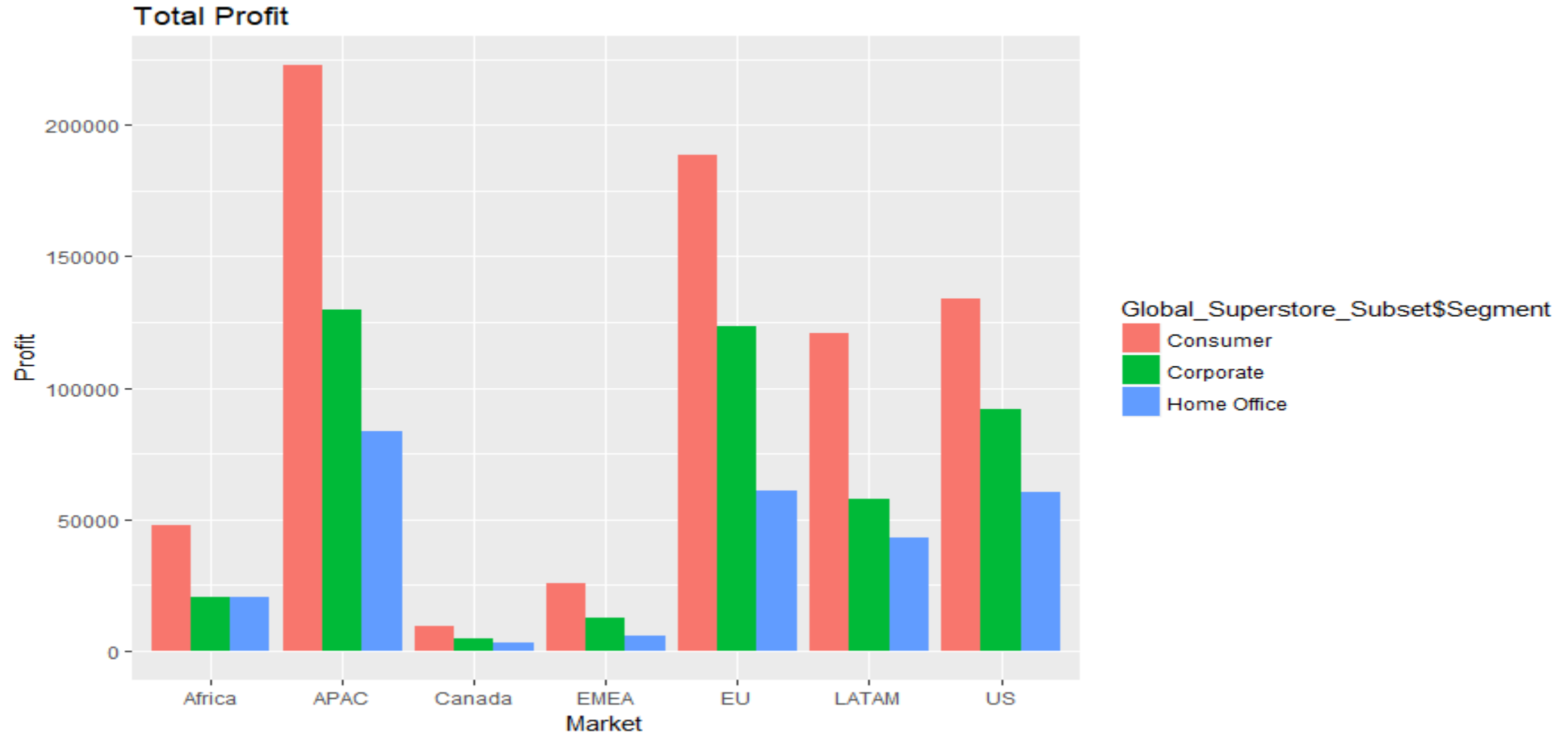
- **Aim:**
 - To forecast sales and demand for next 6 months
- **Problem Statement:**
 - Global Mart is an online store super giant having worldwide operations. It takes orders and delivers across the globe and deals with all the major product categories consumer, corporate & home office.
 - It wants to finalize the plan for the next 6 months. So, it wants to forecast the sales and the demand for the next 6 months, that would help you manage the revenue and inventory accordingly.
- **Approach**
 - We make use of R, a statistical computing program to perform various operations and hence come up with the results.
 - The primary approach is to use EDA and find out the most profitable and consistent market segments.
 - Time Series modelling using classical decomposition and ARIMA to forecast.
 - Model Evaluation finding the MAPE value.
- **Conclusion**
 - Sales and demand for next 6 Months.



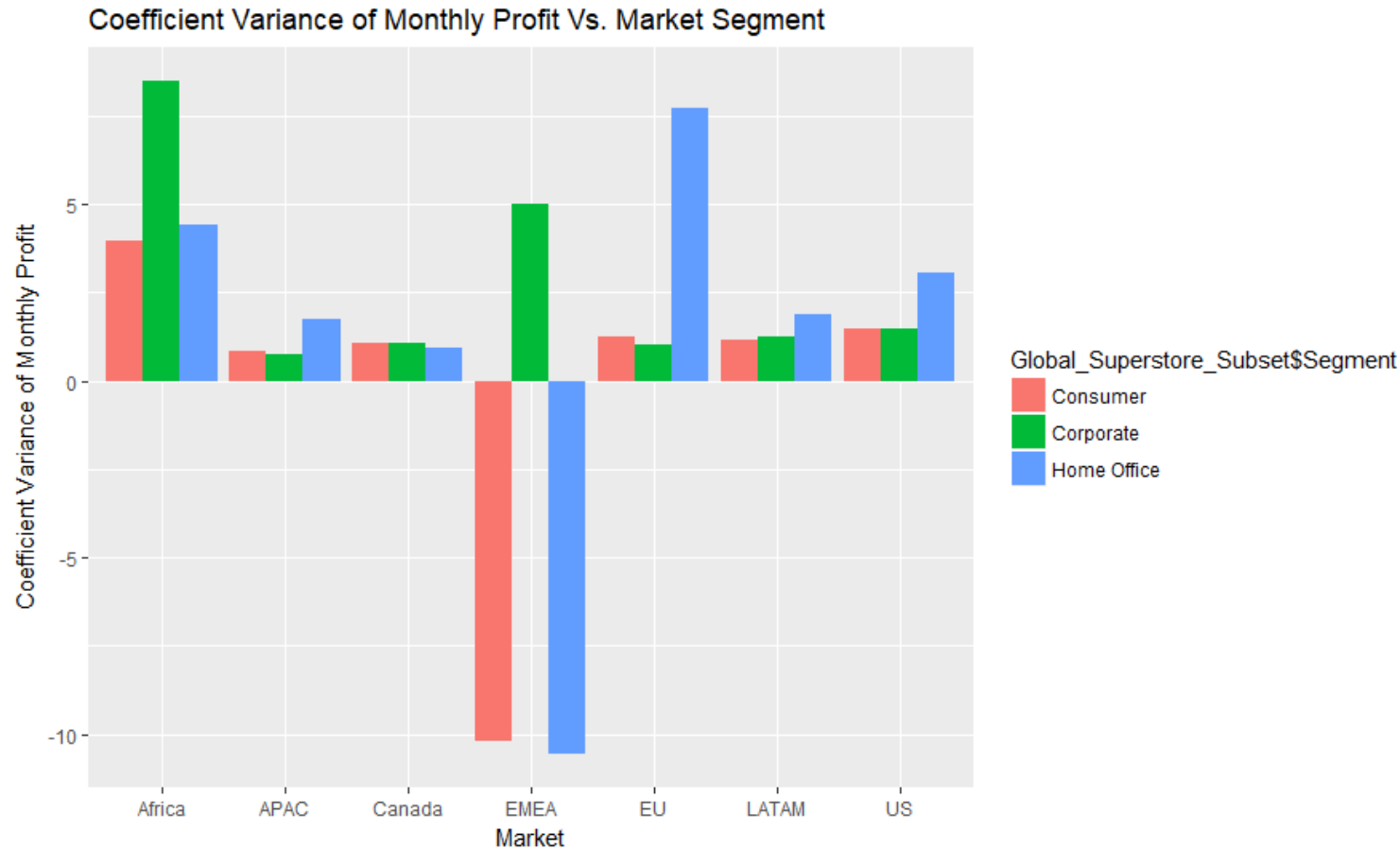
Problem Solving Methodology

1. Understanding the business logic and data.
2. Data preparation and data cleaning.
3. Adding the month component to the existing data. Finding out the best segment and market.
4. Preparing the time series data and decomposing it.
5. Smoothen the curve and build the model.
6. Using the ARIMA function.
7. Model evaluation finding the MAPE value.
8. Forecasting the next 6 months sales and demand.

Choosing the Top 2 Market Segments by Maximum Total Profit



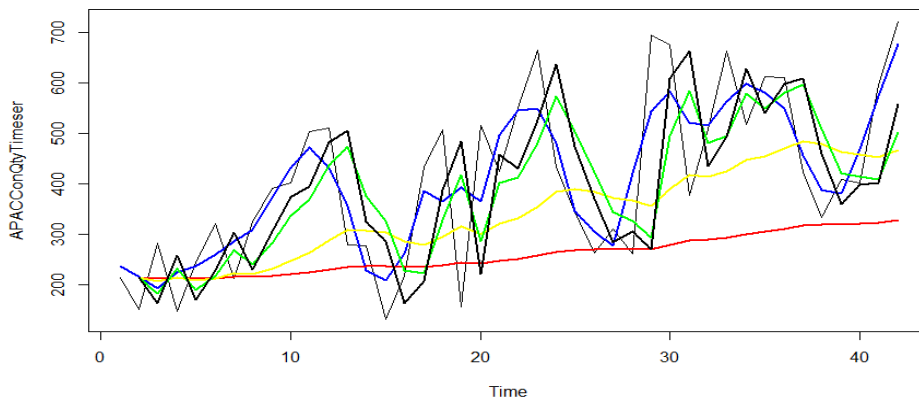
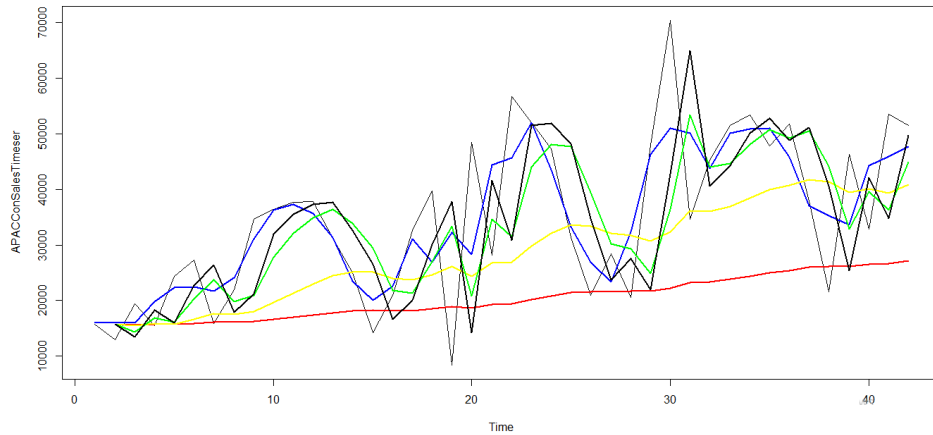
Choosing the Top 2 Market Segments by Consistent Profit



Based on the Total Profits and Consistent Profits, the two top market segments chosen are:

1. APAC Consumer
2. EU Consumer

APAC Consumer Sales and Quantity Smoothing



Original Time series

Grey

Simple MA

Blue

Exponential MA

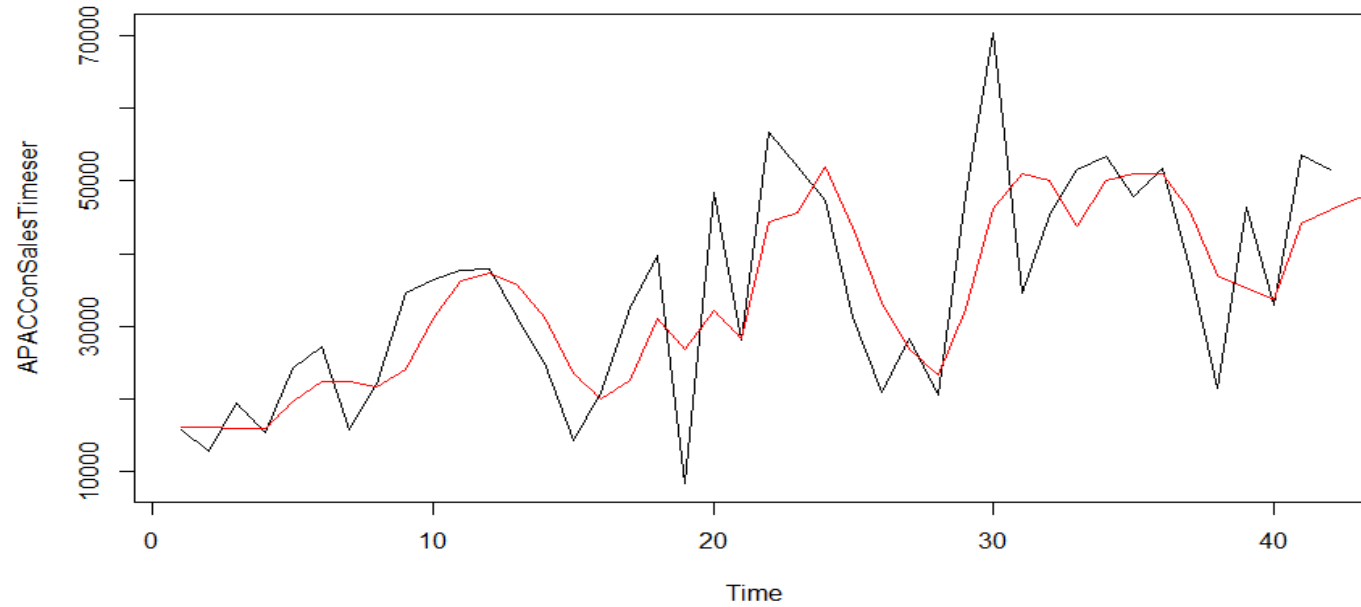
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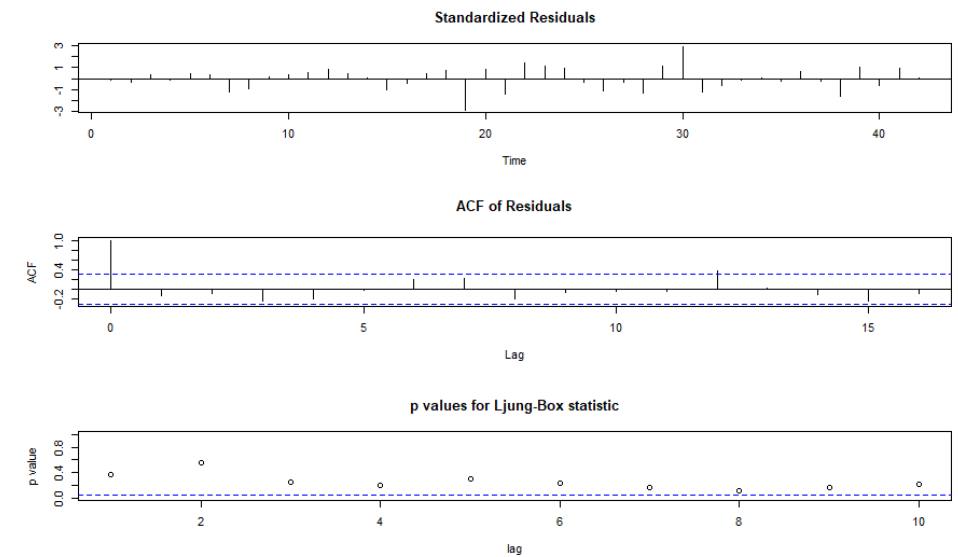
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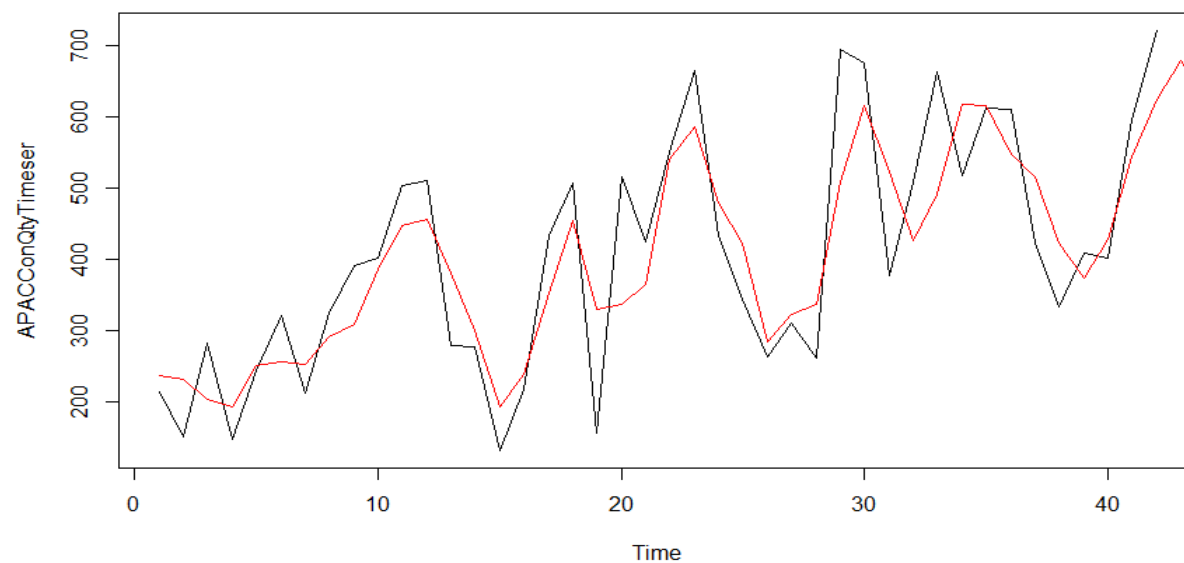
APAC Consumer Sales Predicted Vs Original



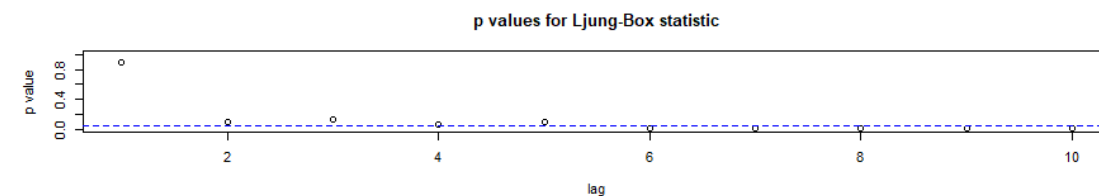
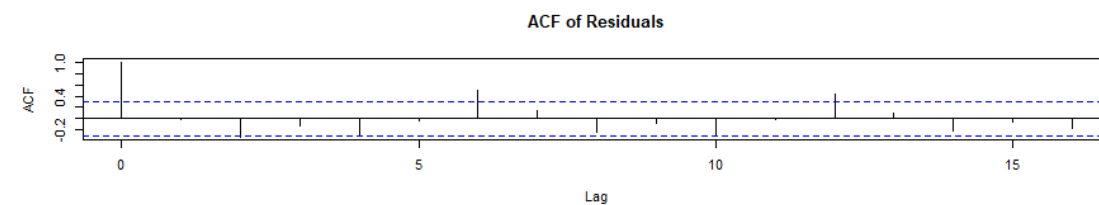
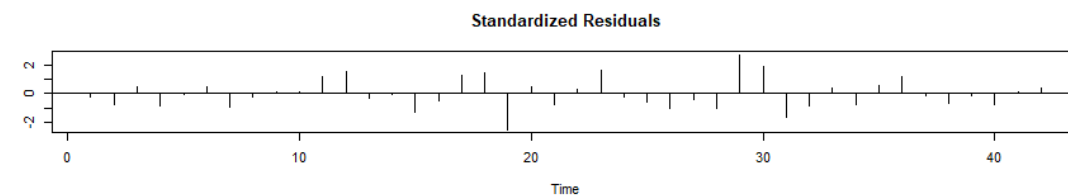
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Predicted – Red



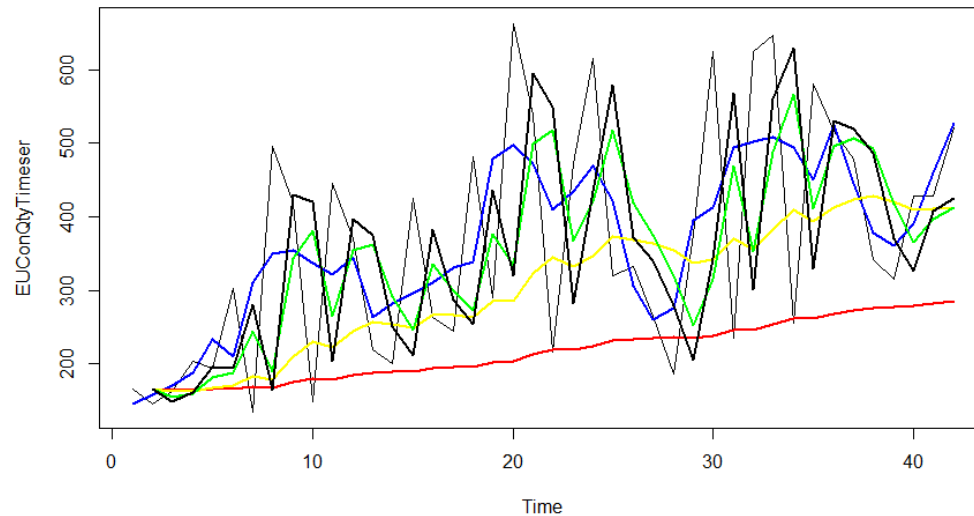
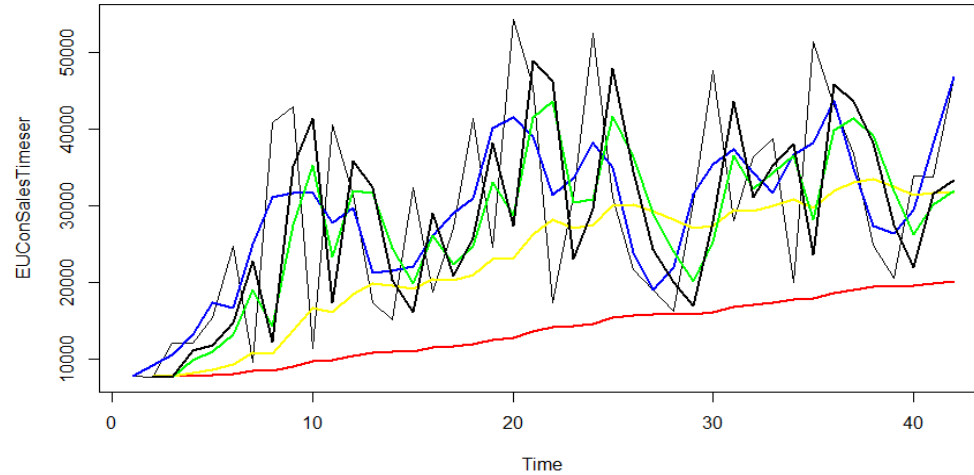
APAC Consumer Quantity Predicted Vs Original



Original - Black
Predicted - Red



EU Consumer Sales and Quantity Smoothing



Original Time series

Grey

Simple MA

Blue

Exponential MA

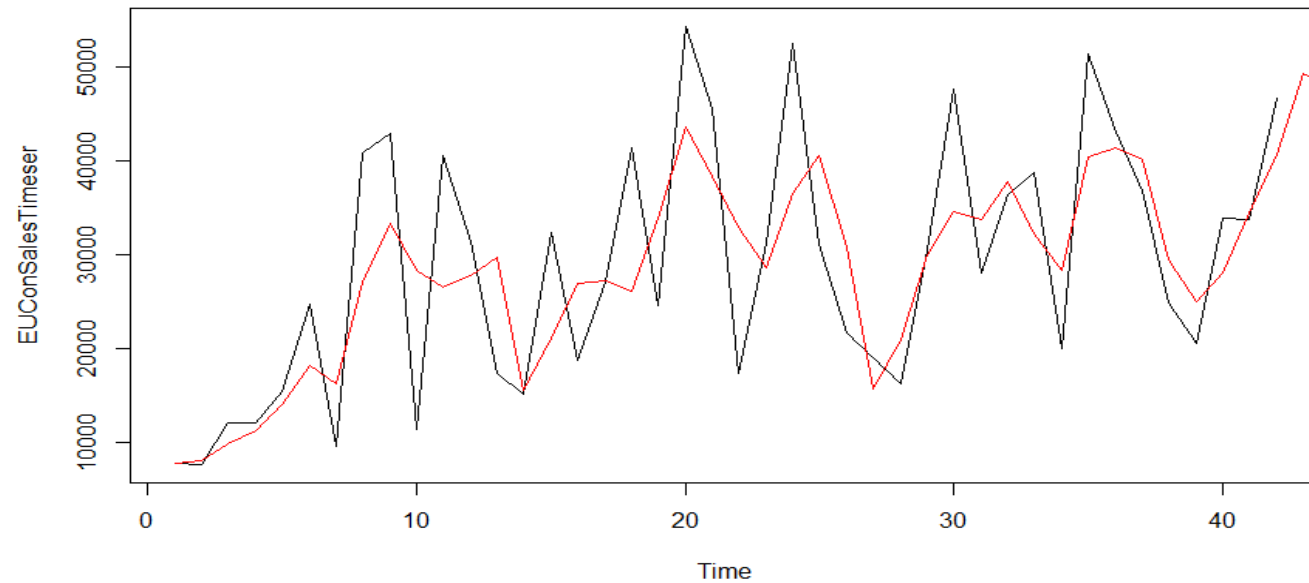
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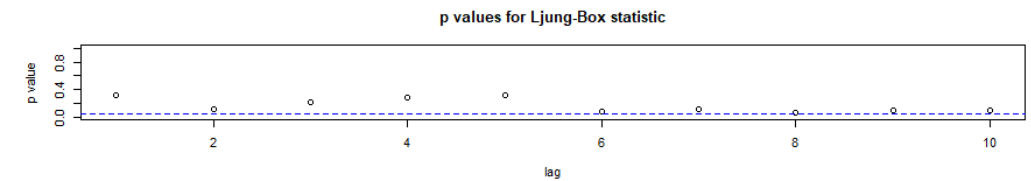
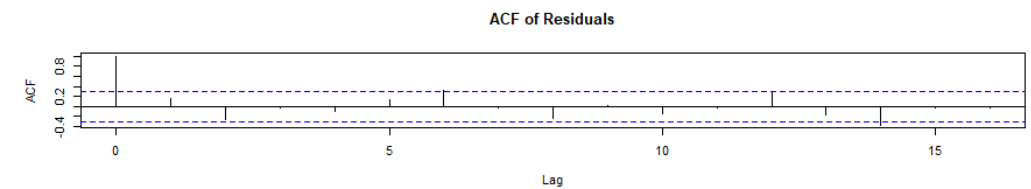
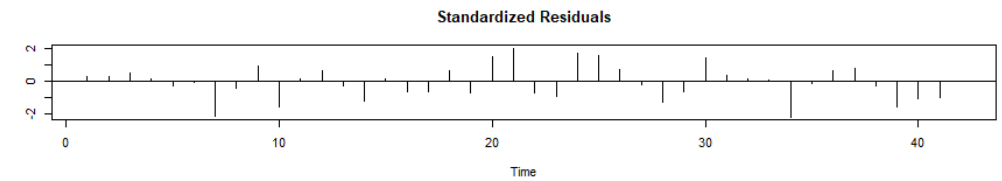
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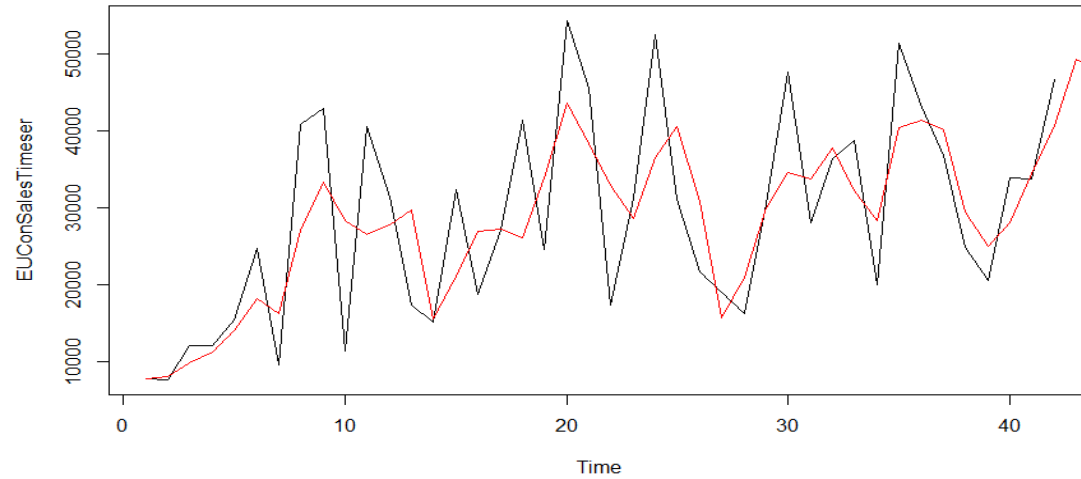
EU Consumer Sales Predicted Vs Original



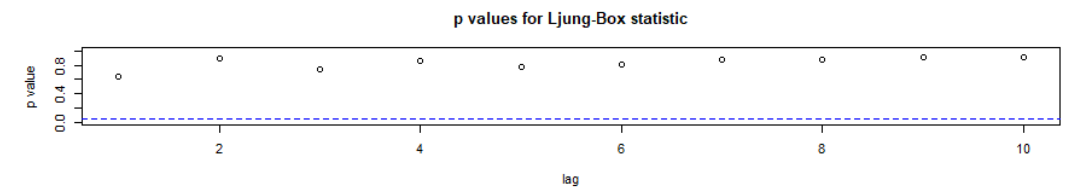
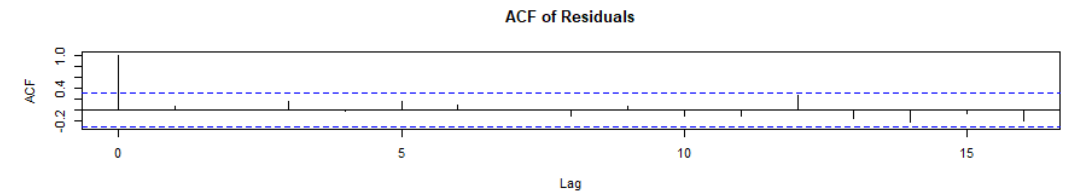
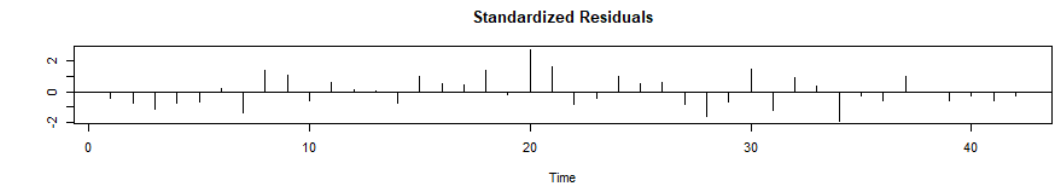
Original - Black
Predicted - Red



EU Consumer Quantity Predicted Vs Original



Original - Black
Predicted – Red



Conclusions

- We observed sales of APAC and EU to show seasonal behaviour.
- Also EU Consumer showed a linear increase in trend in the quantity sold.
- Moderate cyclic behavior was observed in the other trends.
- The forecast of Sales and Quantity for 6 months was done with optimum MAPE Evaluation.