

# RETAIL-GIANT STORES - SALES & QUANTITY FORECASTING

## SUBMISSION

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## **Business Understanding**

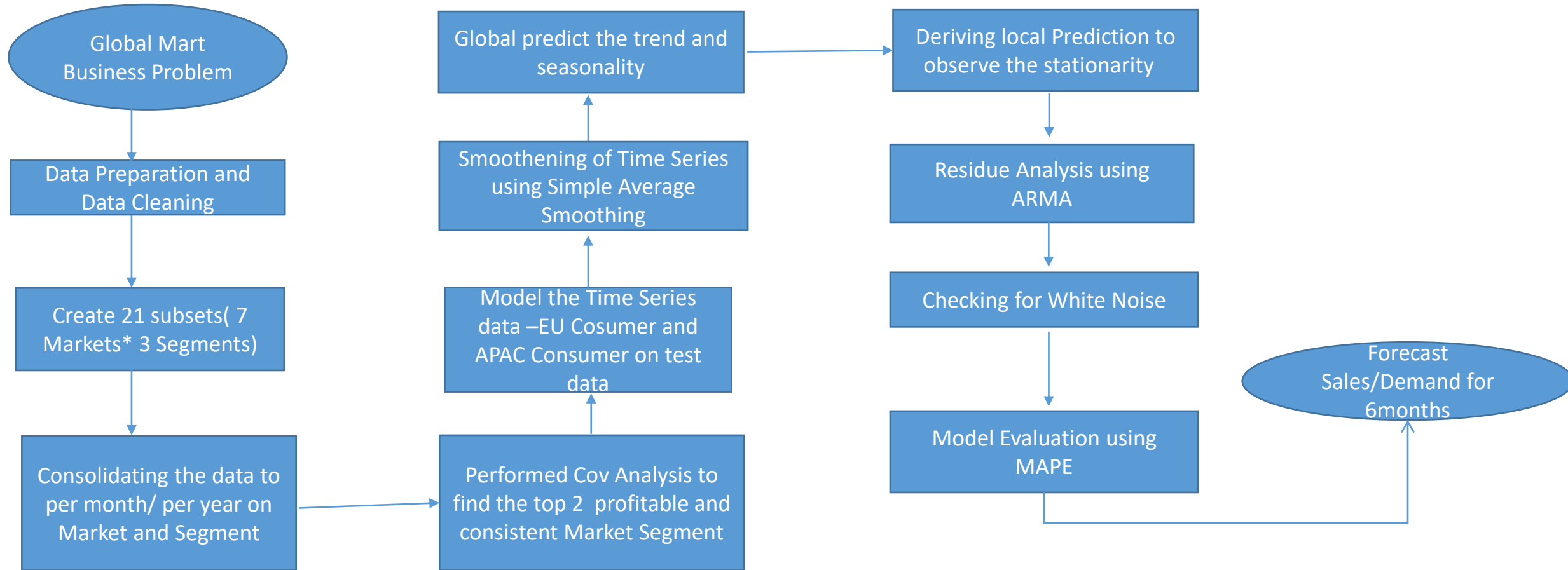
Global Mart is an online store super giant having worldwide operations. It takes orders and delivers across the globe and deals with all the major product categories – consumer, corporate & home office.

As a Sales / Operations manager, you want to forecast the sales / demand for the next 6 months , that would help you manage the revenue and inventory accordingly.

### **Problem Statement**

To find out 2 most profitable and consistent segment from 21 buckets (7 Markets \* 3 Segments) and forecast the sales and demand of these segments for the next 6 months.

## Problem Solving Methodology



## Data Preparation and Cleaning

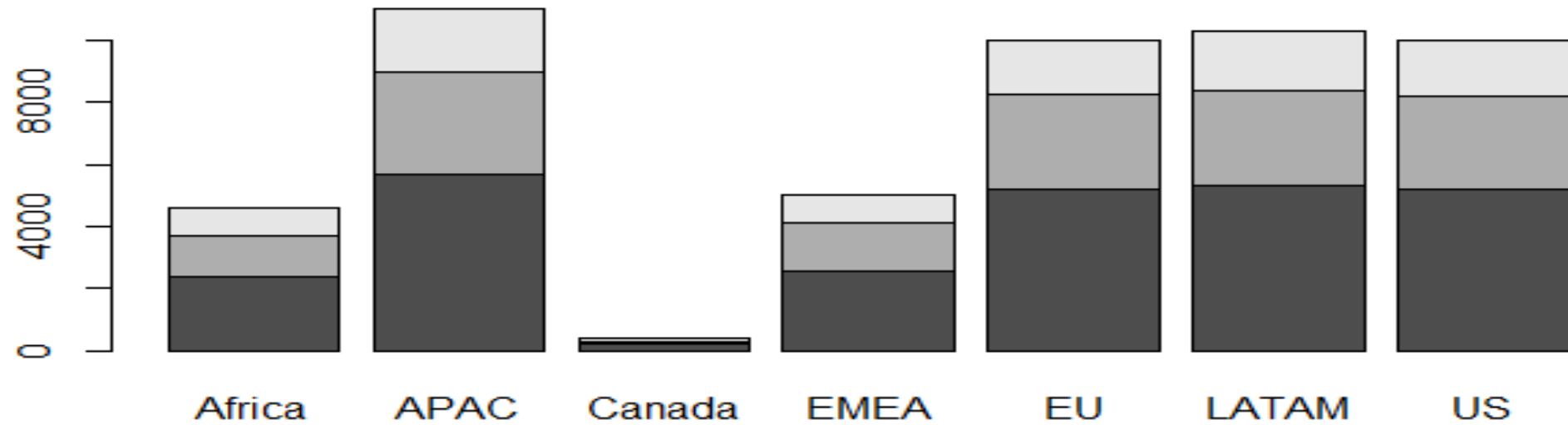
- Transaction level data of GlobalMart superstore is having 51290 observations with 24 attributes.
- Converted Order Date to date format so as to calculate the per month/per year wise Sales, Quantity & Profit.
- Consolidated the dataset into 21 subsets based on the market customer segment levels.
- Aggregated the attributes – Sales, Quantity & Profit over the Order date to arrive at per month per year wise values.
- Calculated the CoV of profit for 21 buckets to find the most profitable and consistent segment.
- On analysing the CoV values, we concluded that the best market segment as EU Consumer and APAC Consumer.

### Data Cleaning

- Checked for missing values and observed that Postal Code attribute has 41296 NA values.
- Checking for the unique values - Market has 7 levels and Segment with 3 levels.

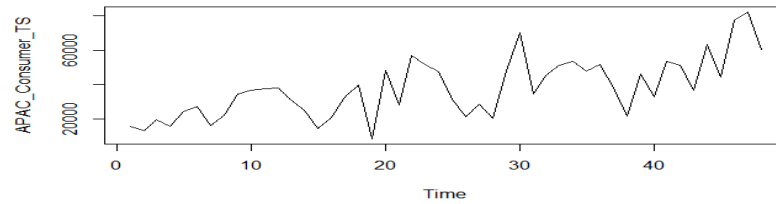
## EDA Plot - Market Segments Vs Count of Orders

- Below plot reveals the composition of count of orders from each of the segments and markets.

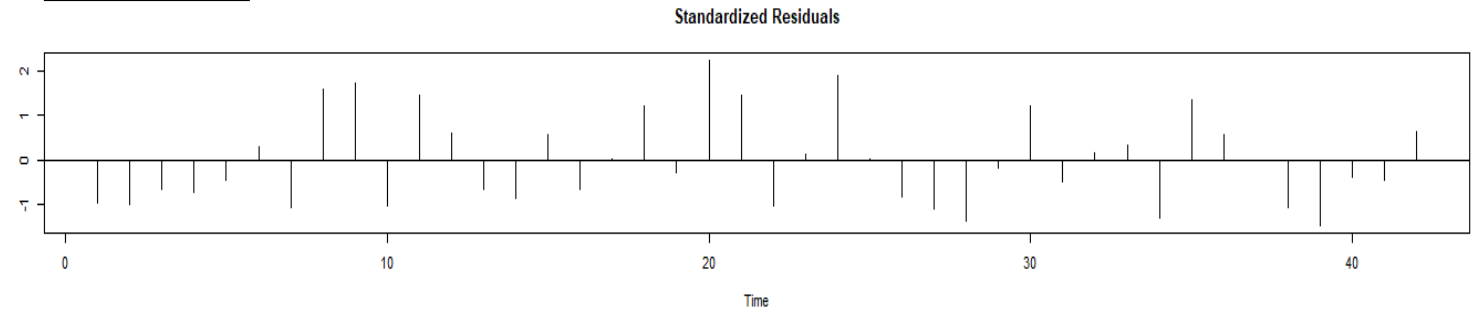


# Time Series Plot- APAC Consumer Sales

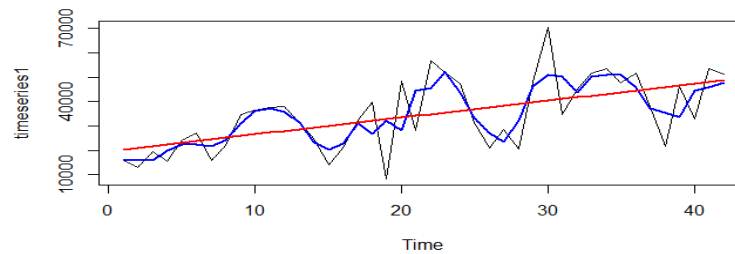
APAC Consumer Sales vs Time



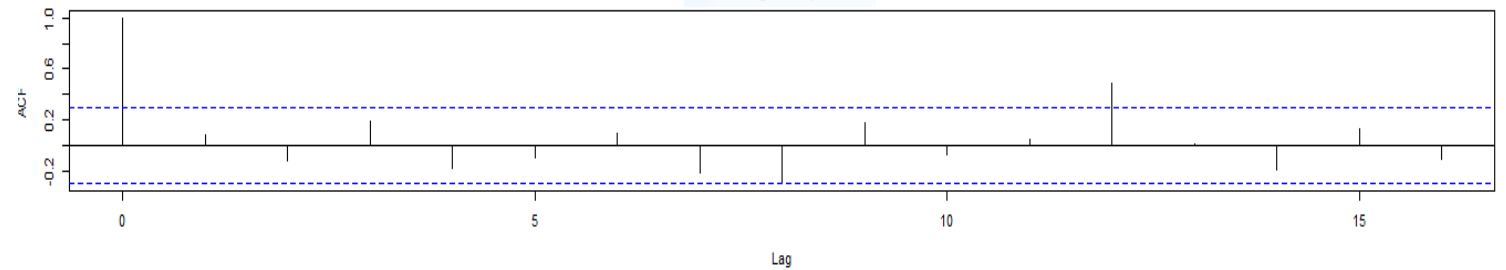
Armafit



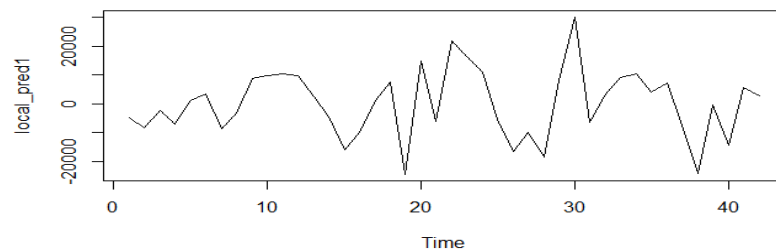
Global Prediction with Smooth and Linear Regression



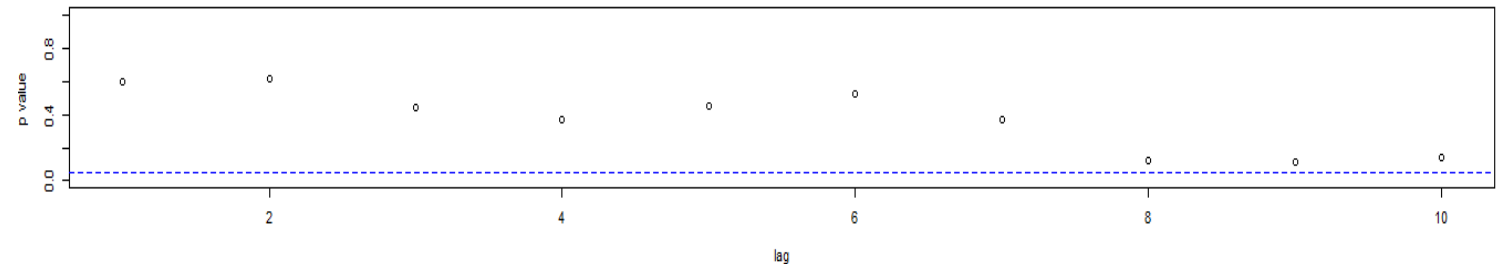
ACF of Residuals



Local Prediction

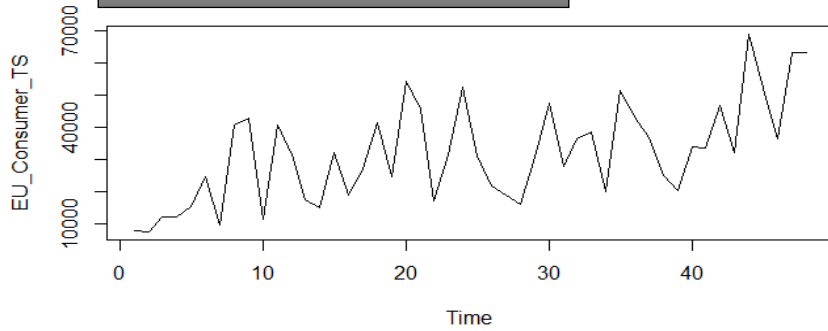


p values for Ljung-Box statistic

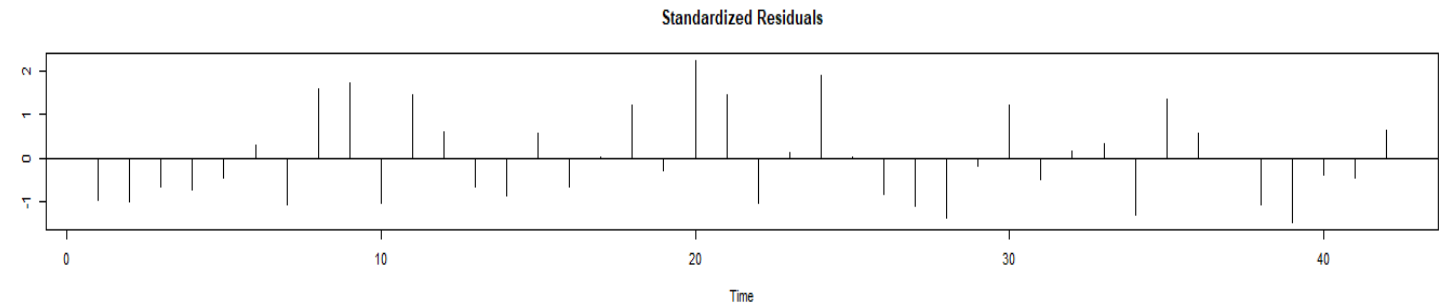


# Time Series Plot – EU Consumer Sales

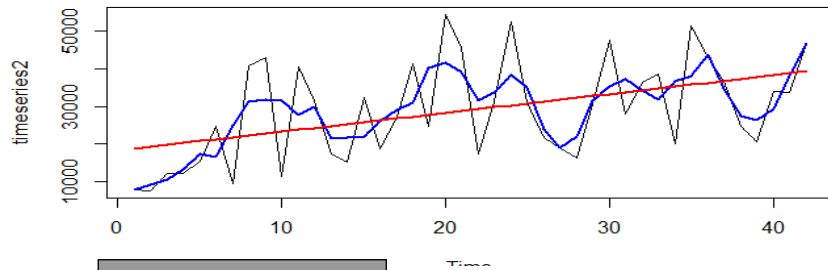
EU Consumer Sales vs Time



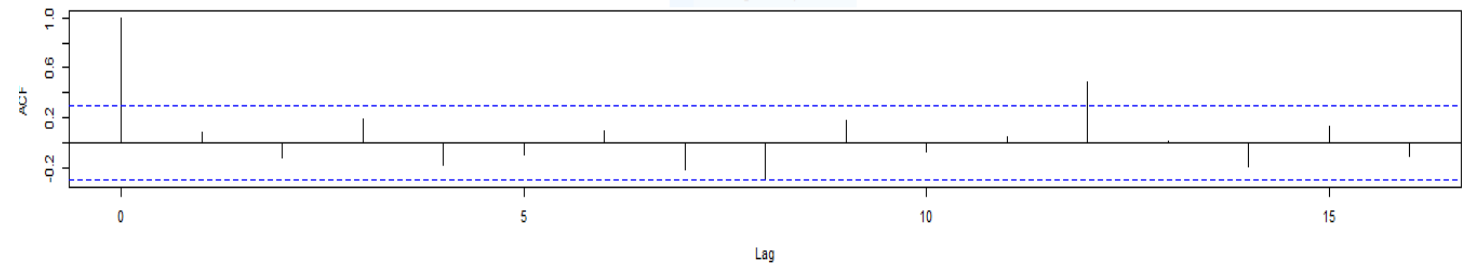
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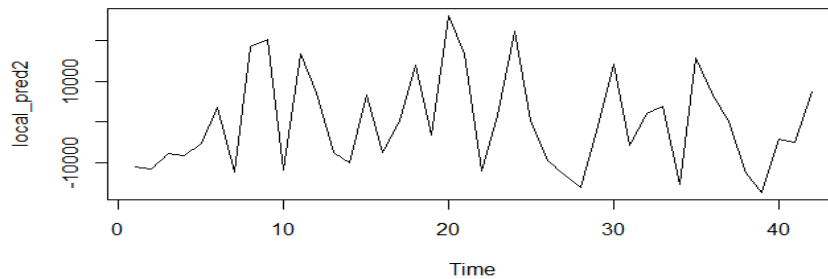
Global Prediction with Smooth and Linear Regression



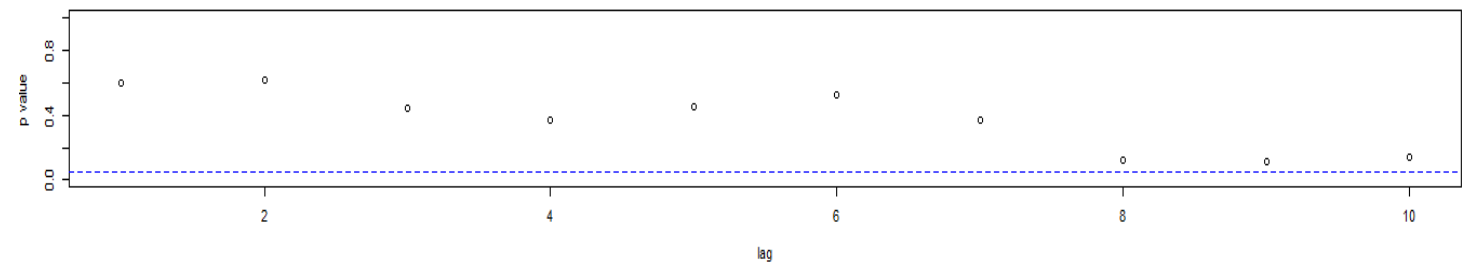
ACF of Residuals



Local Prediction

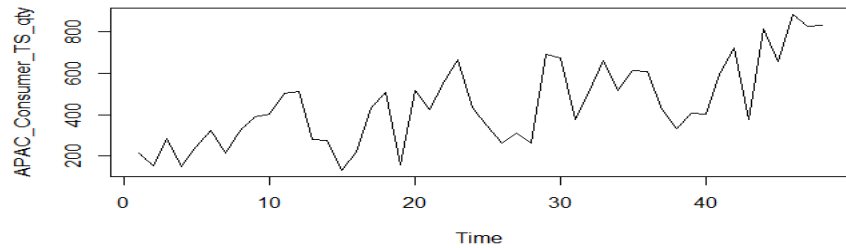


p values for Ljung-Box statistic

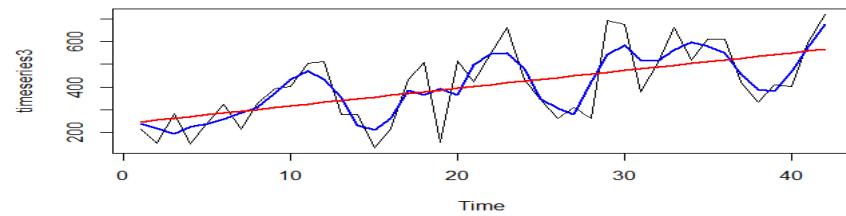


# Time Series Plot- APAC Consumer Quantity

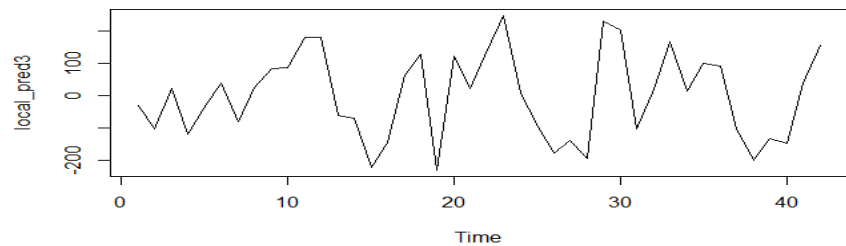
APAC Consumer Quantity vs Time



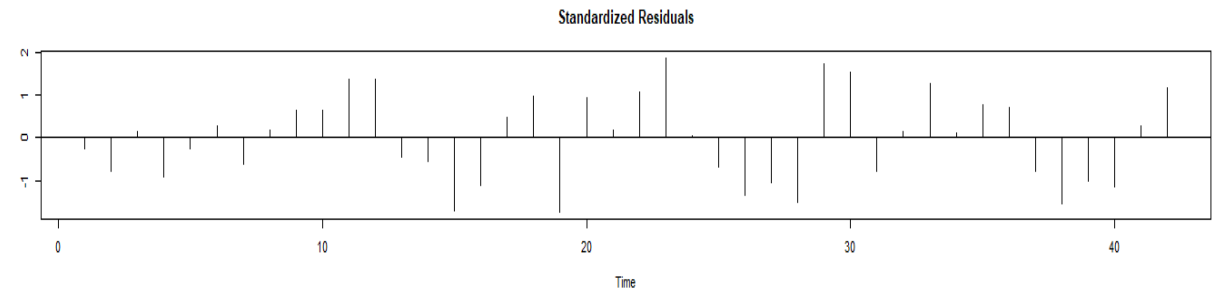
Global Prediction with smooth and Linear Regression



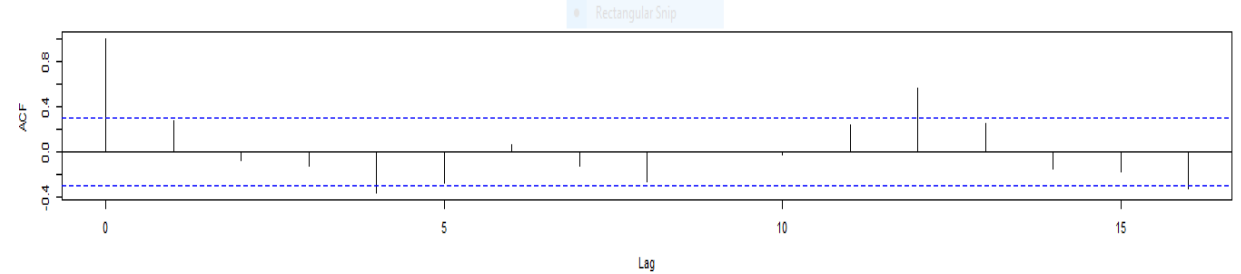
Local Prediction



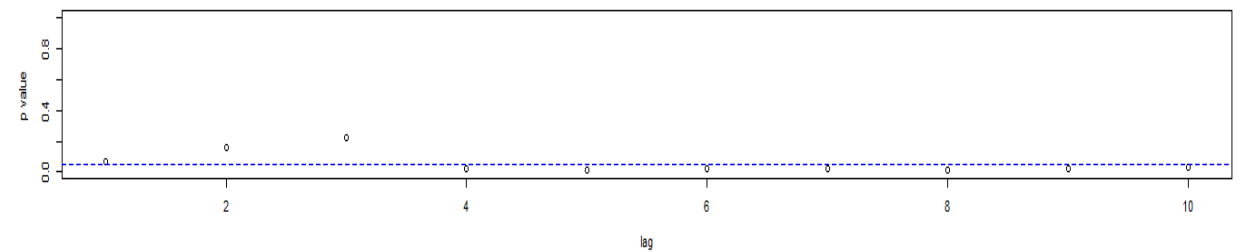
Armafit



ACF of Residuals



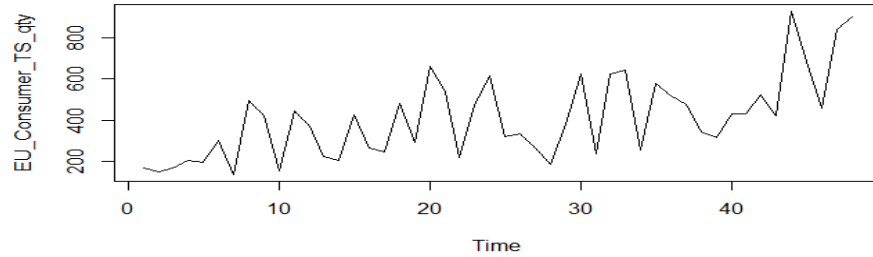
p values for Ljung-Box statistic



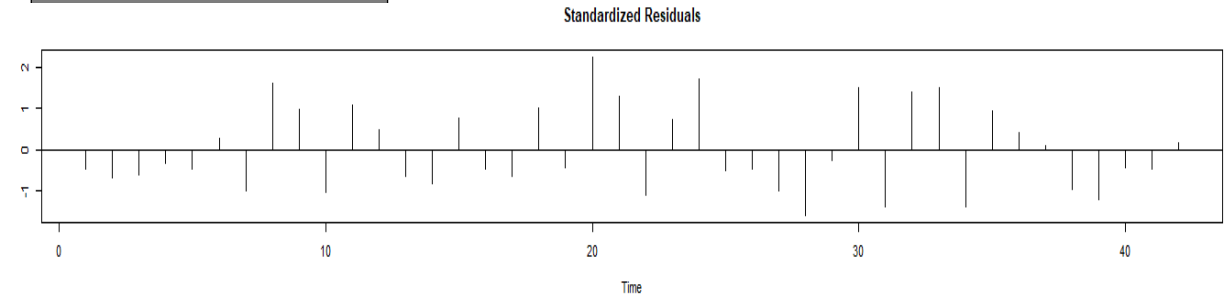


## Time Series Plot - EU Consumer Quantity

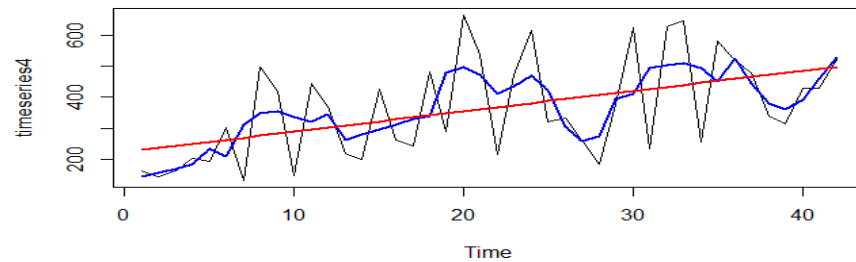
EU Consumer Quantity vs Time



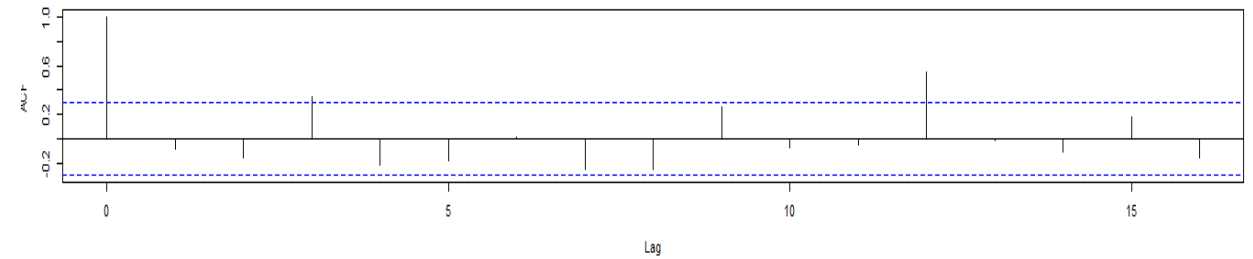
Armafit



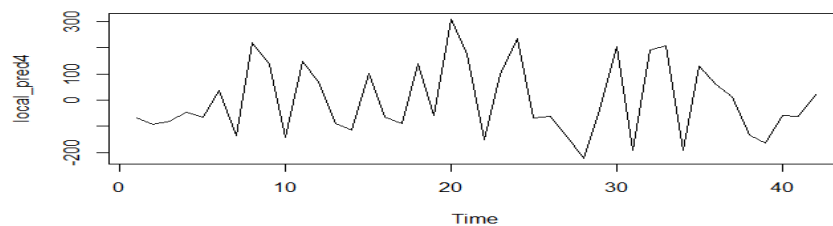
Global Prediction with smooth and Linear Regression



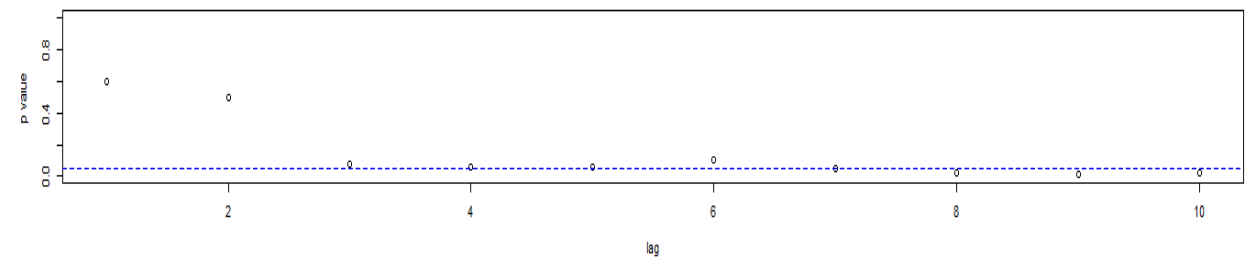
ACF of Residuals



Local Prediction



p values for Ljung-Box statistic



## CONCLUSION

- Analysed sales and quantity across two profitable and consistent Market Segments.
- Comparing the MAPE values for the TS Models are given below:

Models	MAPE Values
APAC Consumer Sales	60.91
EU Consumer Sales	58.97
APAC Consumer Quantity	60.97
EU Consumer Quantity	61.67