



GLOBAL MART – SALES FORECASTING

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BUSINESS OBJECTIVE

Global Mart, a giant online superstore delivers orders worldwide in three prominent product categories, in 7 major markets

1. Consumer Products
2. Corporate Products
3. Home Office Products

Objective:

Based on the current data, forecast sales and demand for the next 6 months

METHODOLOGY

BUSINESS OBJECTIVE

UNDERSTANDING THE DATA

DATA PREPARATION

DATA MODELING

MODEL EVALUATION

FORECASTING

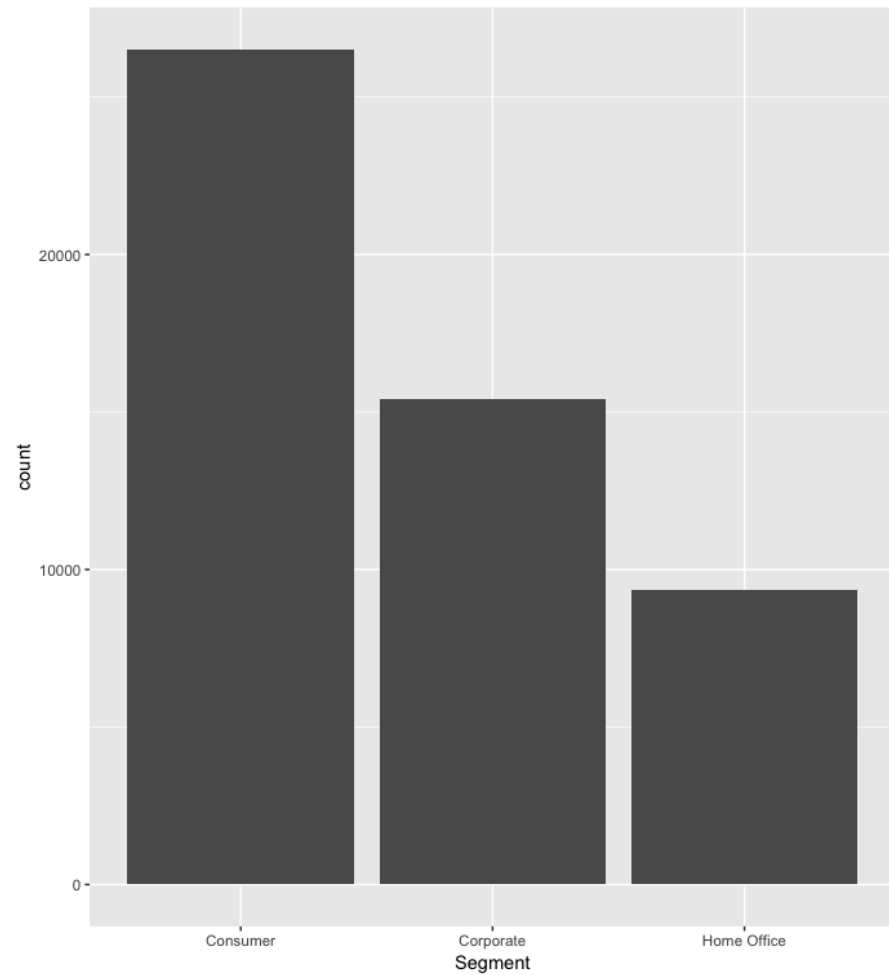
- Preparing the data as per the ask – creating 21 market segment buckets
- Aggregate buckets on sales, profit and quantity
- Evaluate basis Coefficient of Variance
- Filter basis top 2 segments based on CV and profit
- Aggregate data for the top segments month on month

- Convert data for the top 2 segments into a time series format
- Smoothen the data to identify trends, plausible seasonality
- Splitting data into train and validation set
- Model Building – Regression
- Model Building 2 – ARIMA Model

- Using MAPE, evaluate the validation set
- Select the best model
- Check for white noise, if any

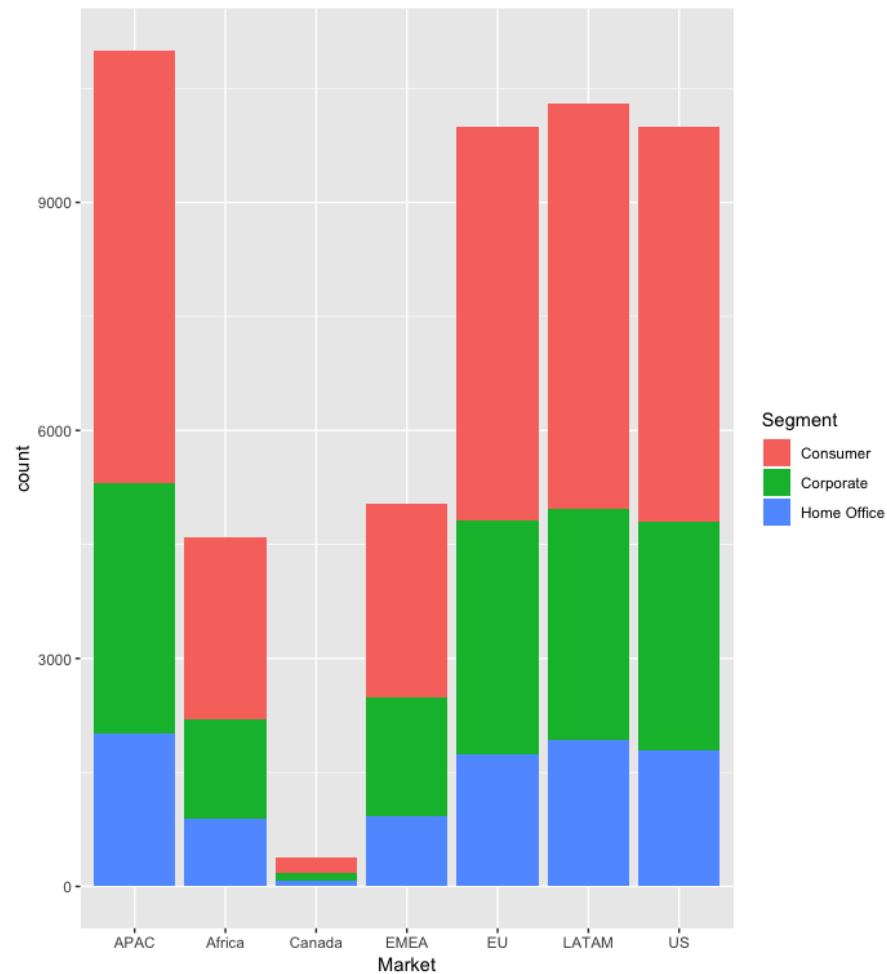
- Use best model to forecast the 6 months sales for the top segments separately

ORDER WEIGHTAGE BY SEGMENT



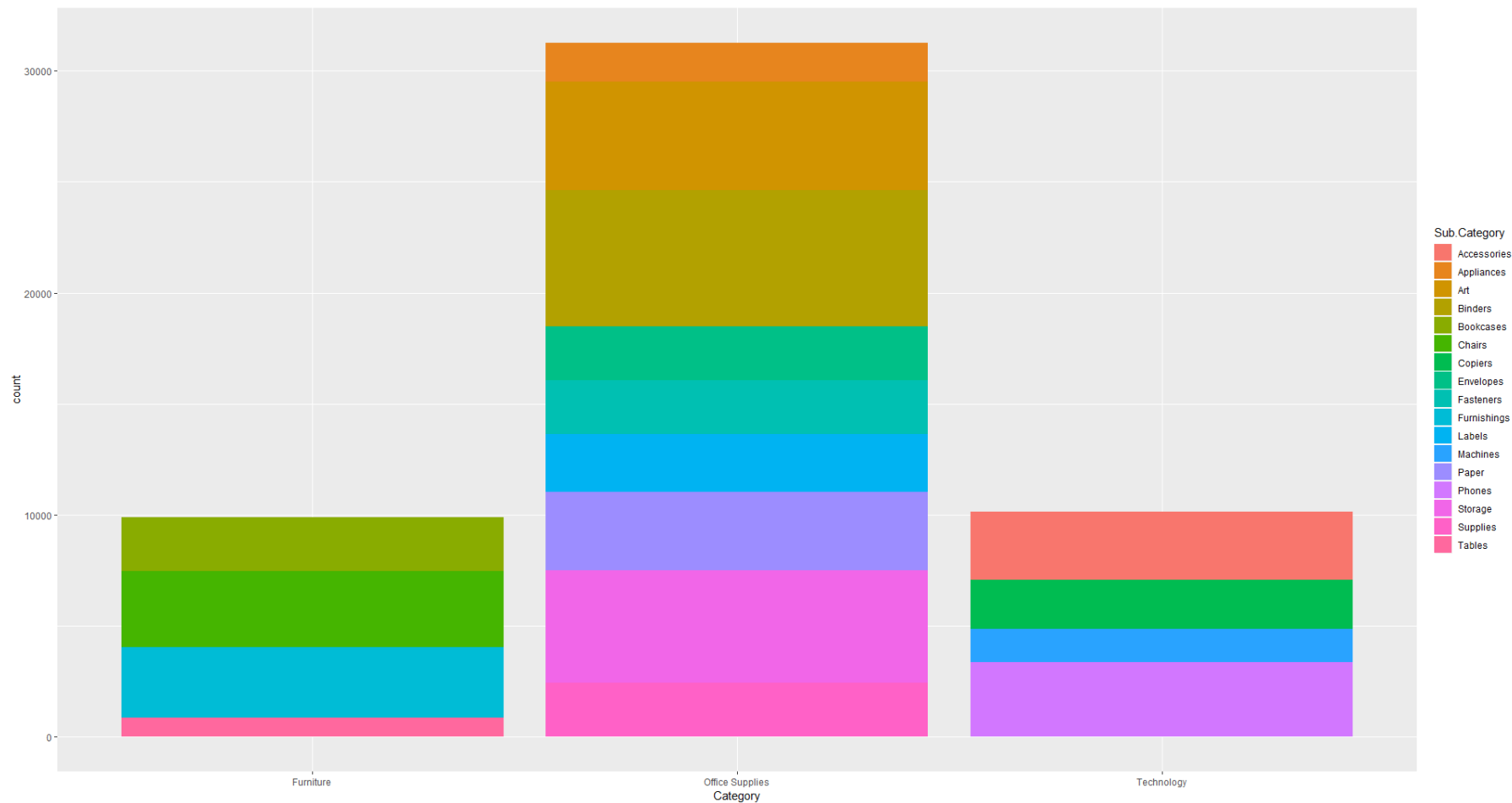
The most popular being Consumer Segment

DECODING THE MARKETS BASED ON SUB-CATEGORIES

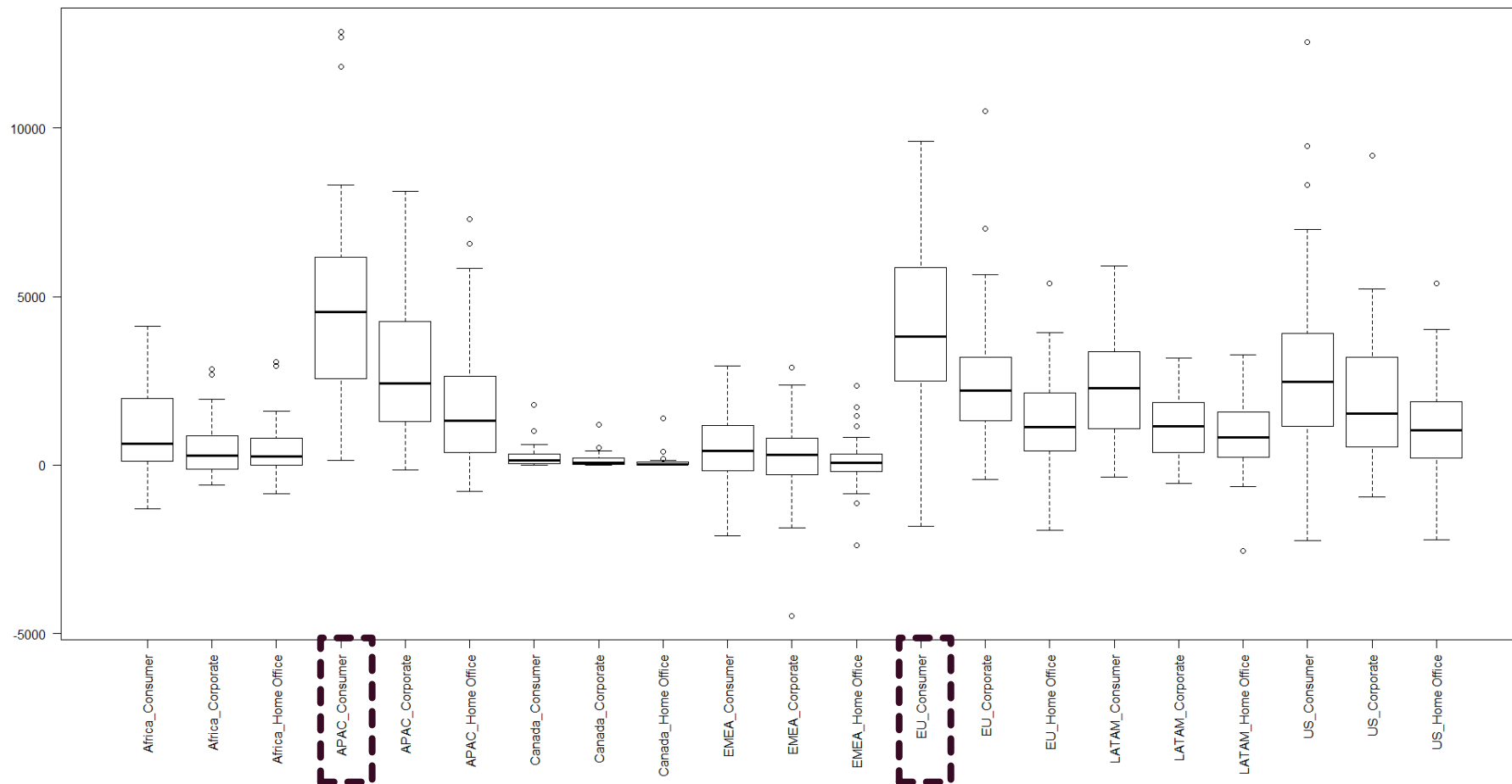


On face value, APAC followed by LATAM

ORDER WEIGHTAGE BY CATEGORY & SUB-CATEGORY



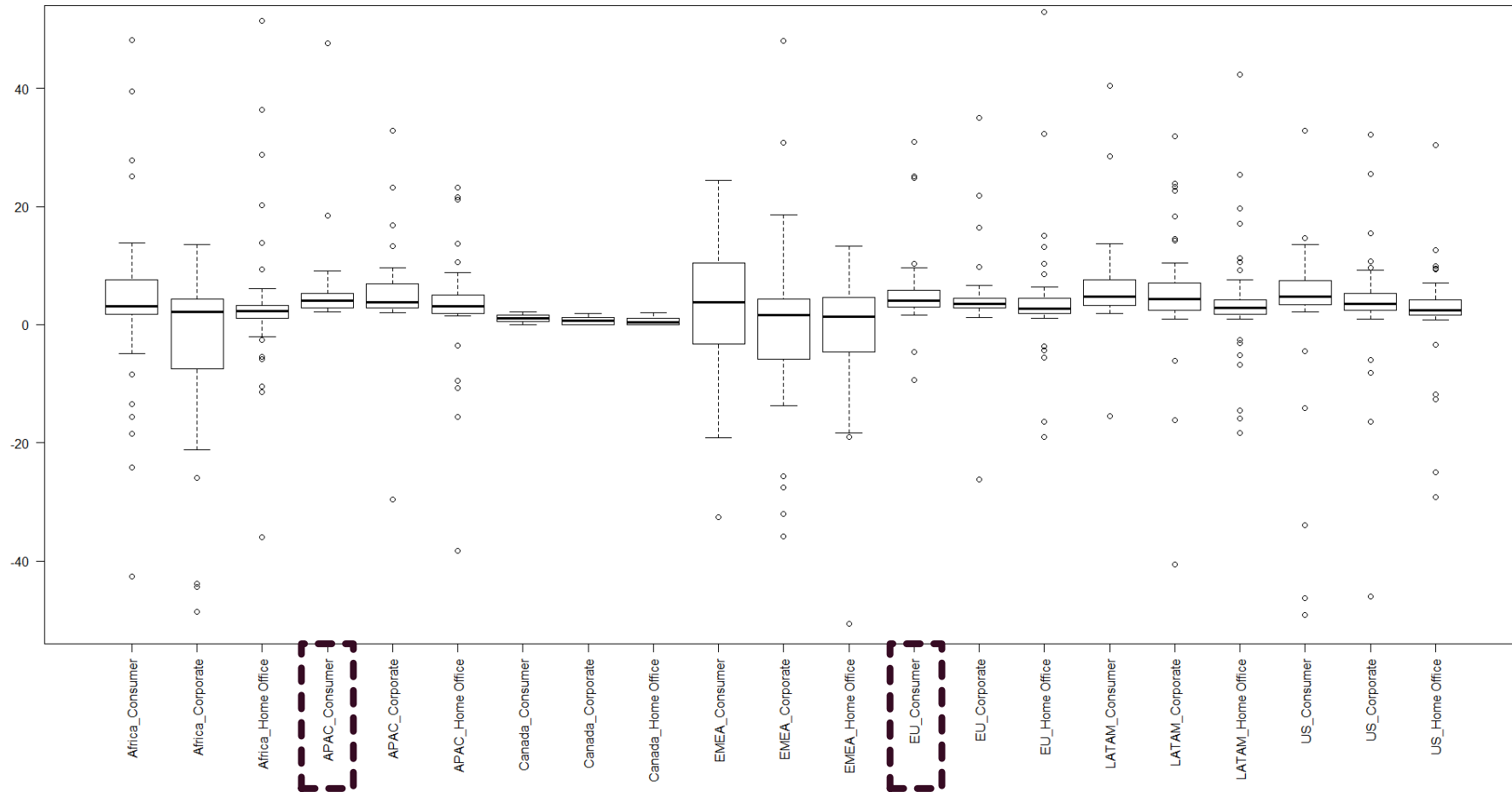
BEST MARKET-SEGMENT COMBINATION BY TOTAL PROFIT



Based on the analysis on Total Profits, the most profitable markets are:

1. APAC Consumer
2. EU Consumer

BEST MARKET-SEGMENT COMBINATION BY COEFFICIENT OF VARIANCE

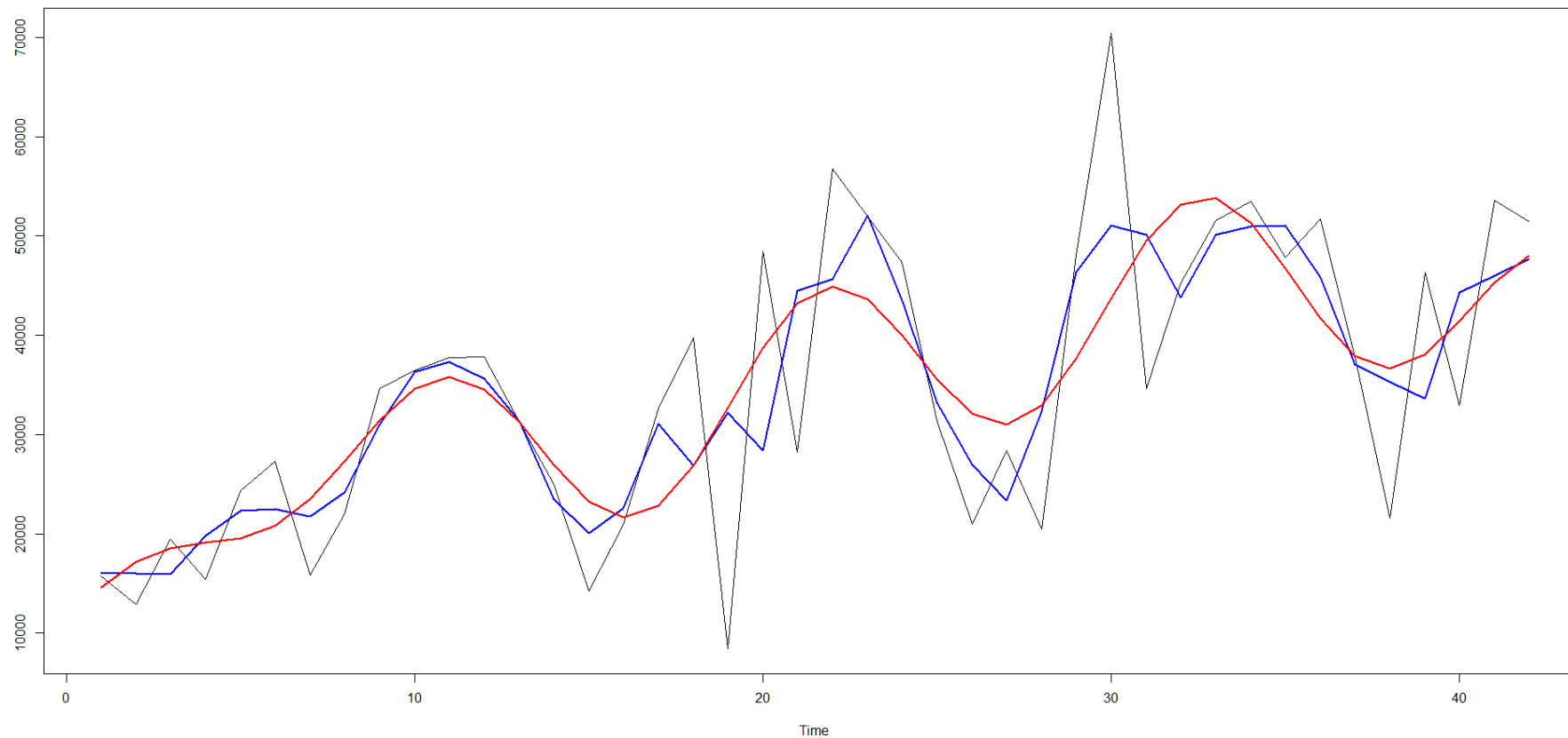


The least CV is for:

1. APAC Consumer
2. EU Consumer

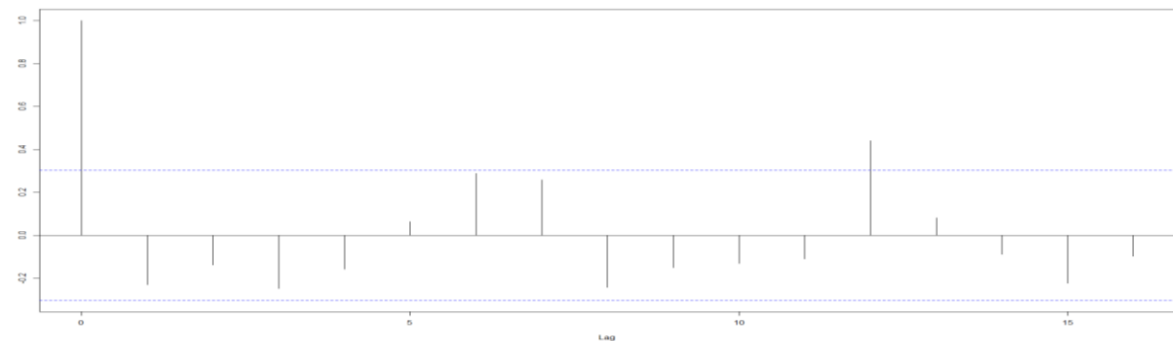
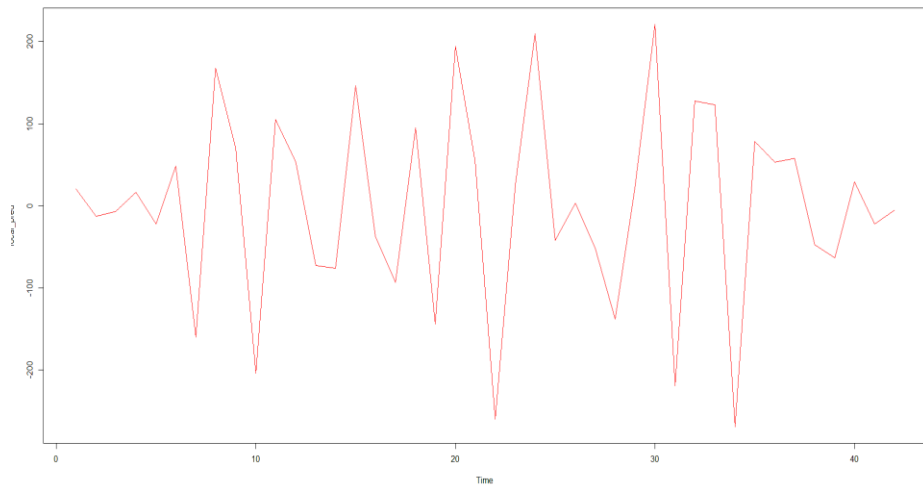
APAC CONSUMER SALES GLOBAL TIMES SERIES

■ ORIGINAL TIME SERIES CURVE ■ SMOOTHED TIME SERIES CURVE ■ GLOBAL PREDICTED TIME SERIES CURVE

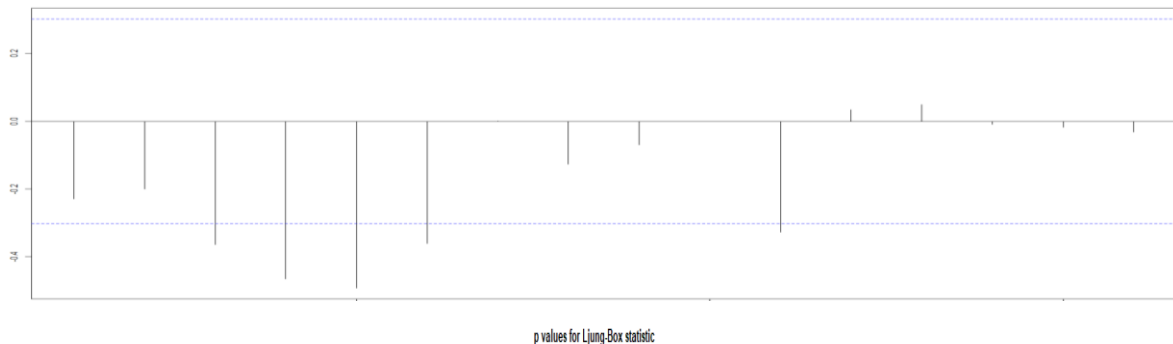


APAC CONSUMER SALES LOCAL SERIES, ACF, PACF & RESIDUAL PLOTS

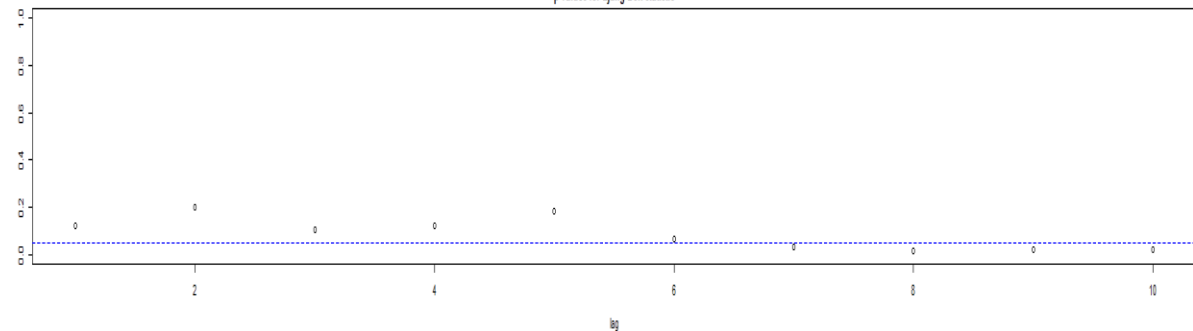
LOCAL TIME SERIES



ACF PLOT



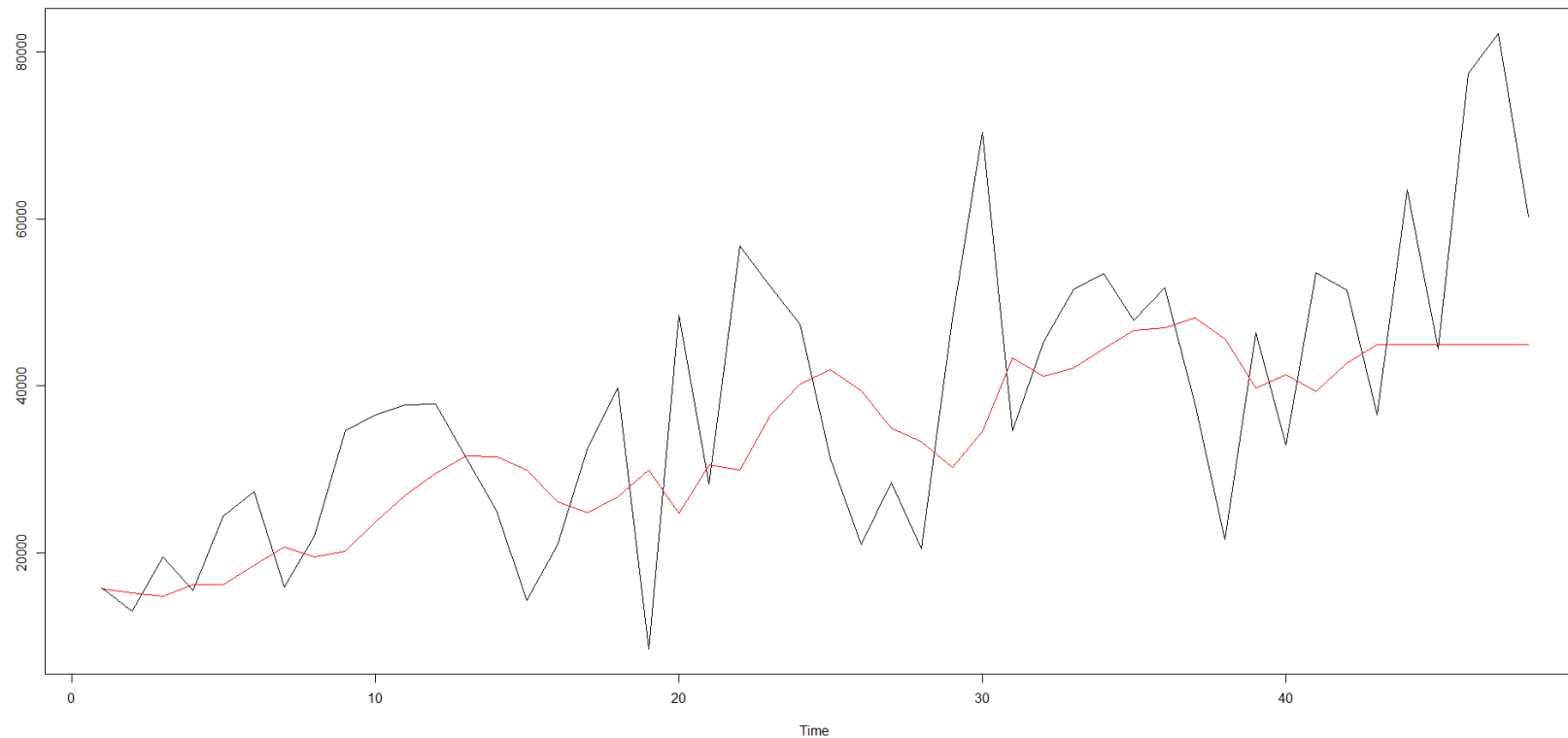
PACF PLOT



RESIDUAL PLOT

BEST MAPE VALUE AND COMPLETE FORECASTING GRAPH FOR APAC CONSUMER SALES

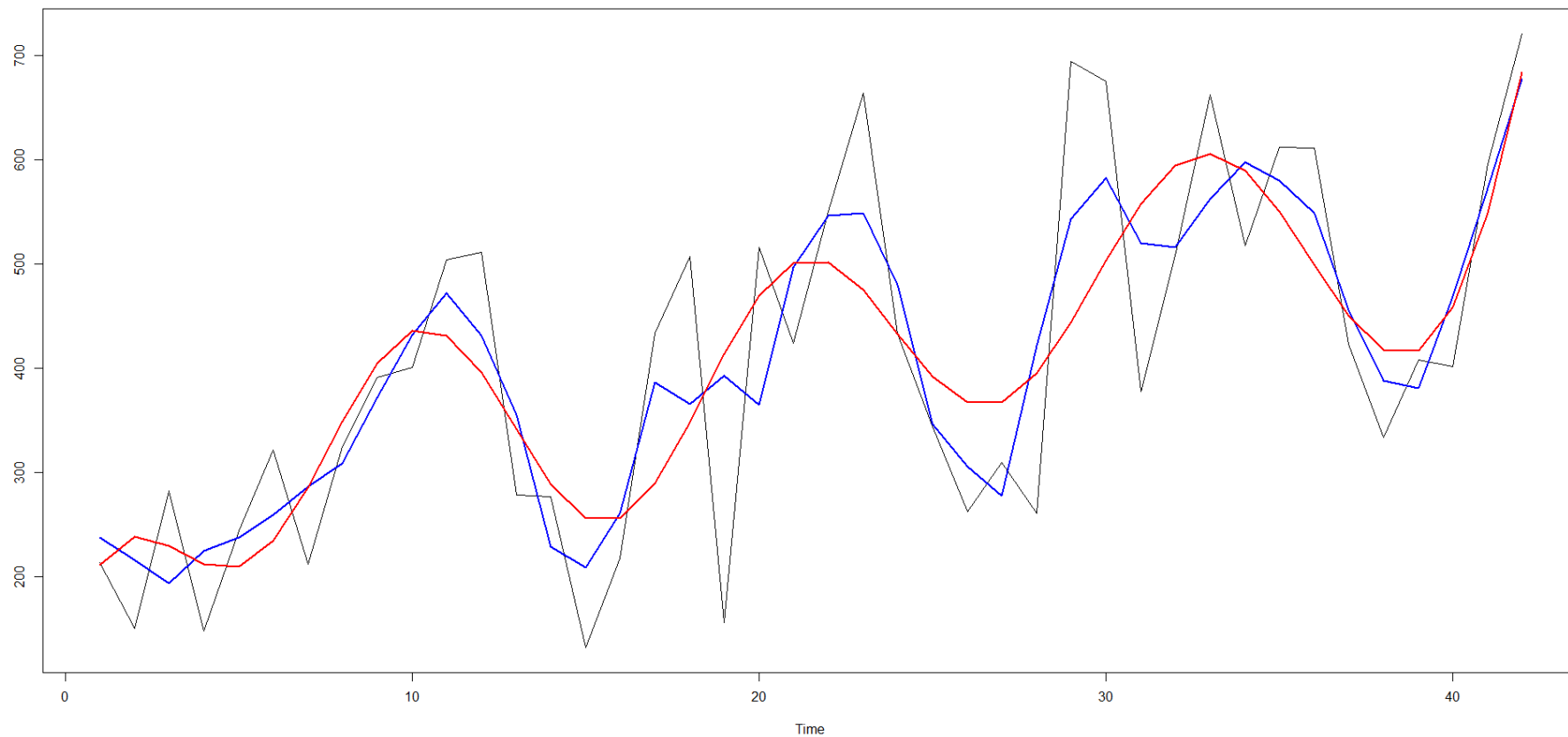
■ ORIGINAL TIME SERIES CURVE ■ PREDICTED TIME SERIES CURVE



MAPE Value : 27.689

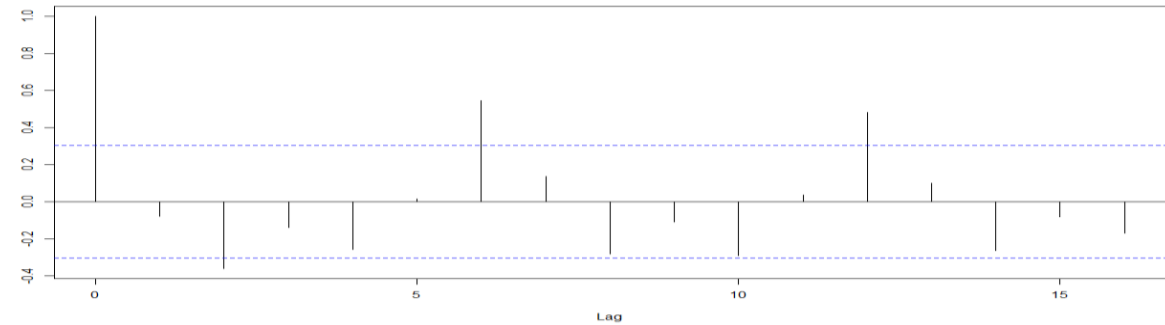
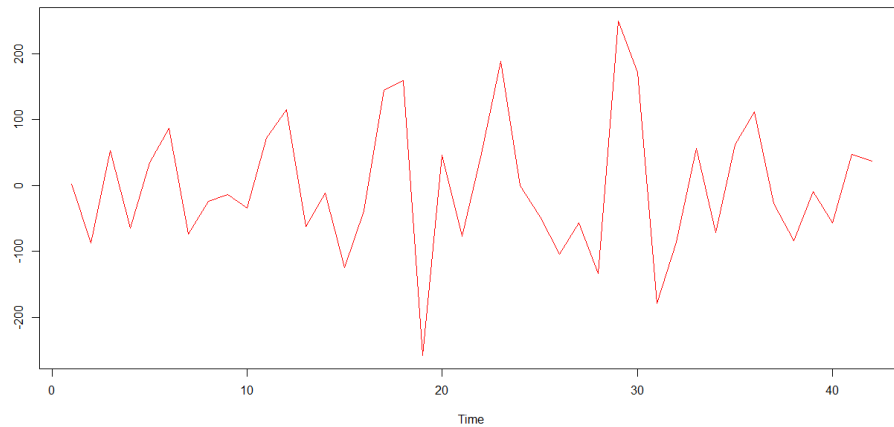
APAC CONSUMER DEMAND GLOBAL TIMES SERIES

■ ORIGINAL TIME SERIES CURVE ■ SMOOTHED TIME SERIES CURVE ■ GLOBAL PREDICTED TIME SERIES CURVE

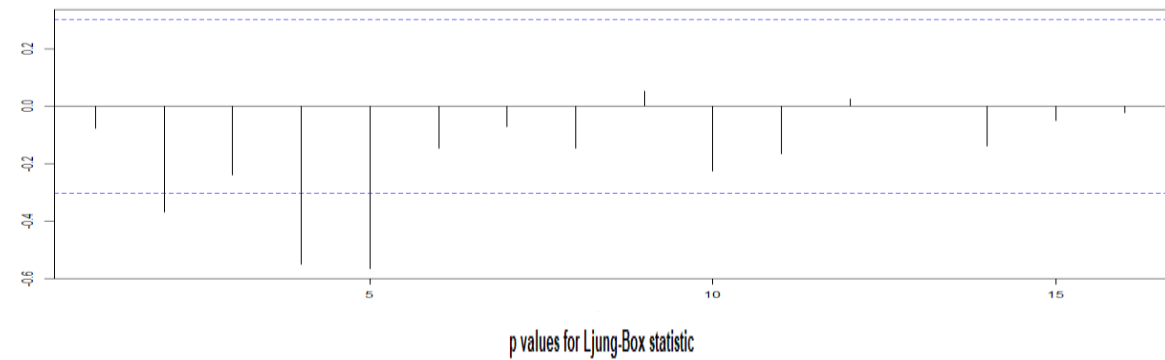


APAC CONSUMER DEMAND LOCAL SERIES, ACF, PACF & RESIDUAL PLOTS

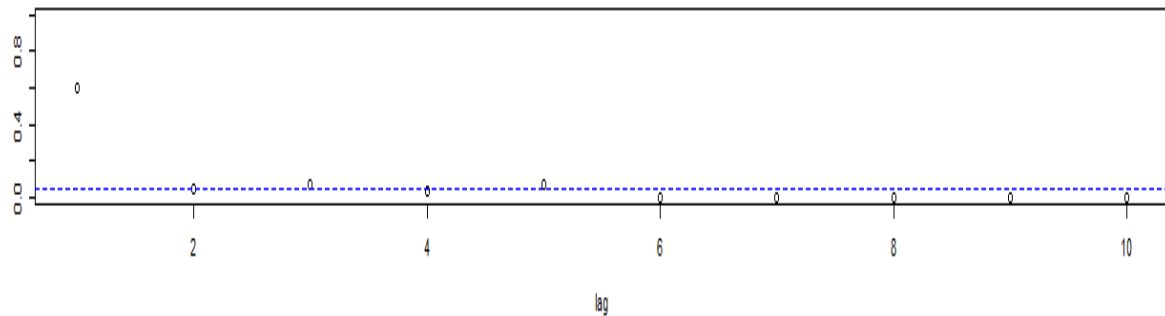
LOCAL TIME SERIES



ACF PLOT

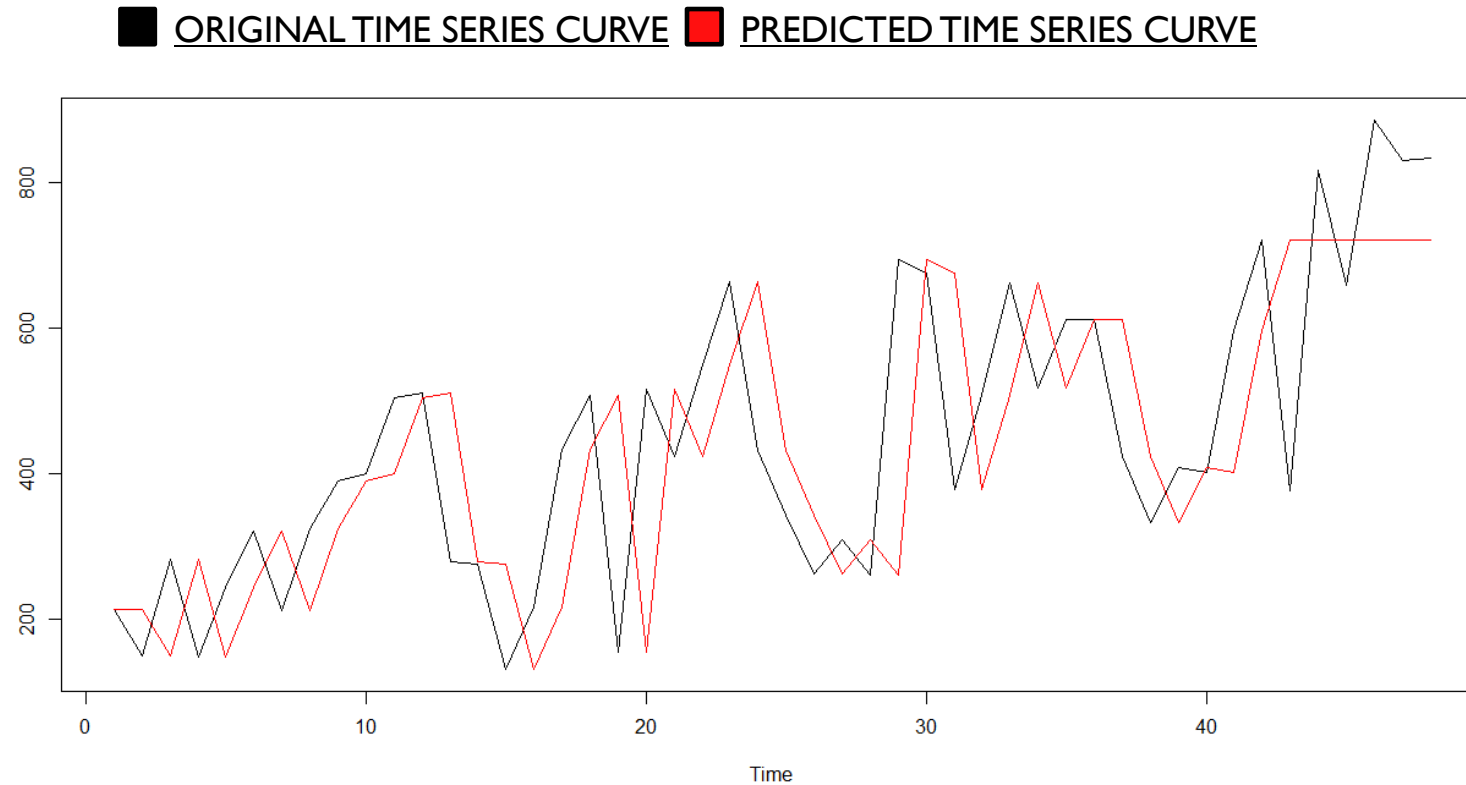


PACF PLOT



RESIDUAL PLOT

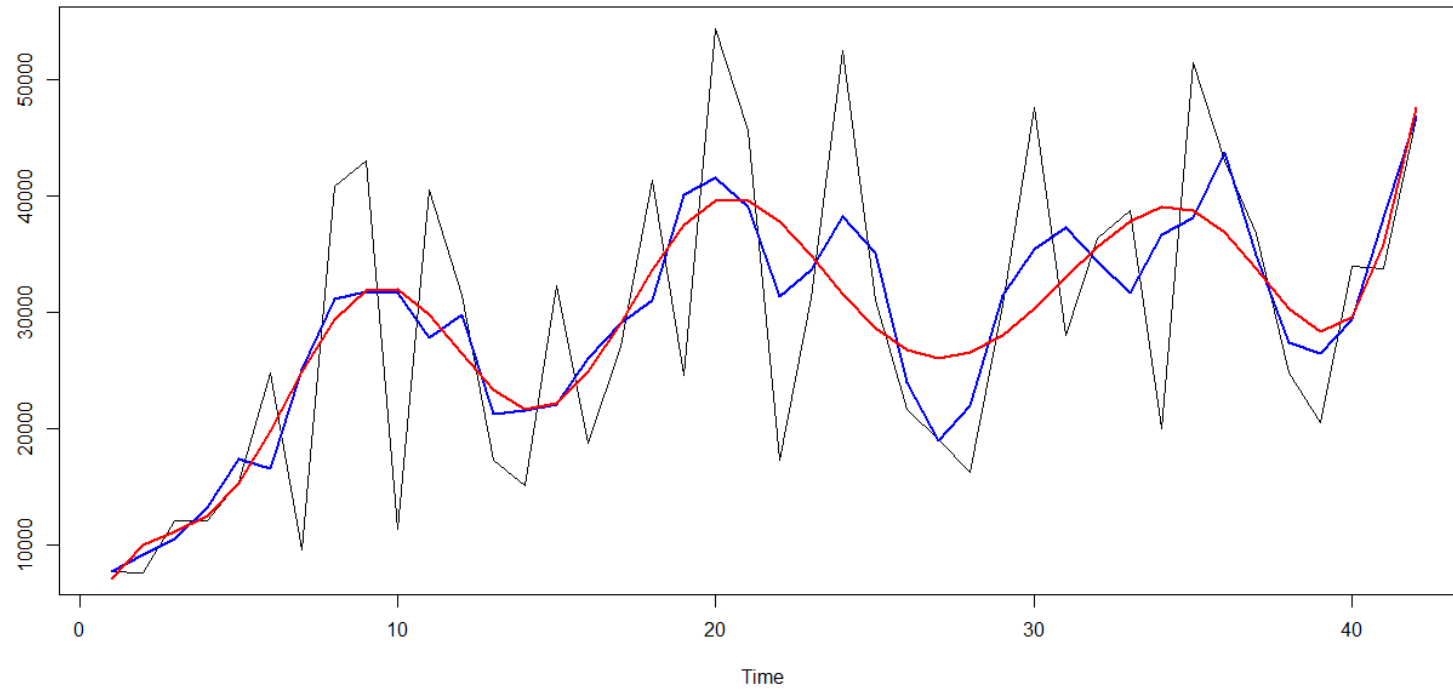
BEST MAPE VALUE AND COMPLETE FORECASTING GRAPH FOR APAC CONSUMER DEMAND



MAPE Value : 26.244

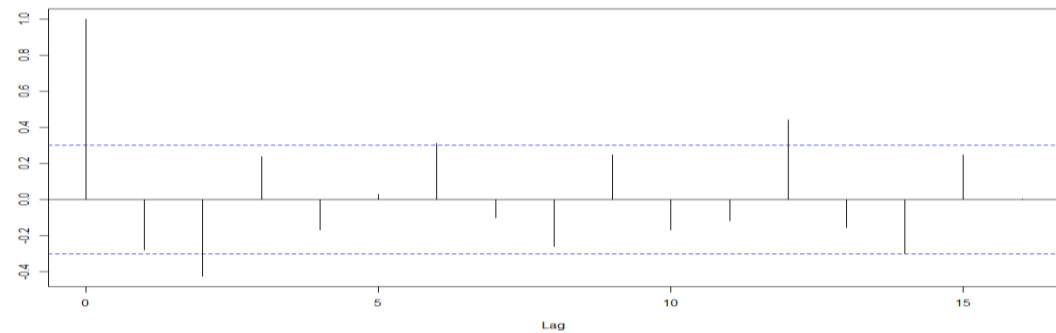
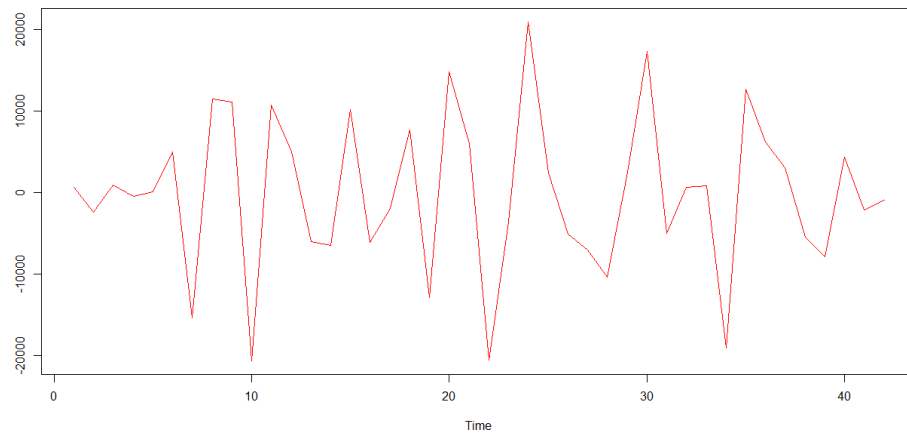
EU CONSUMER SALES GLOBAL TIMES SERIES

■ ORIGINAL TIME SERIES CURVE ■ SMOOTHED TIME SERIES CURVE ■ GLOBAL PREDICTED TIME SERIES CURVE

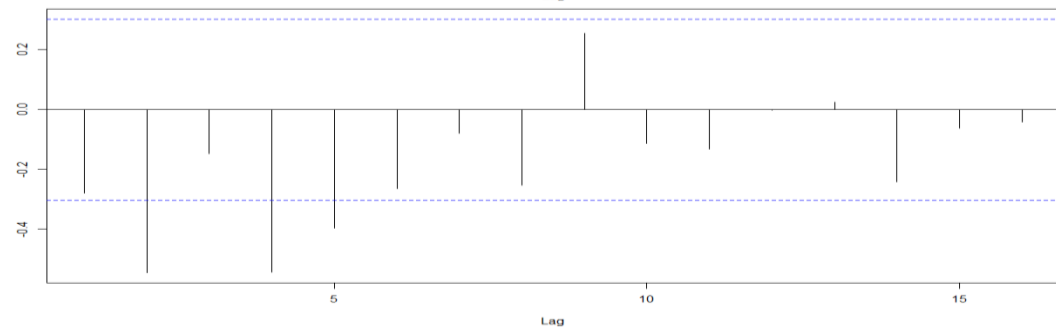


EU CONSUMER SALES LOCAL SERIES, ACF, PACF & RESIDUAL PLOTS

LOCAL TIME SERIES

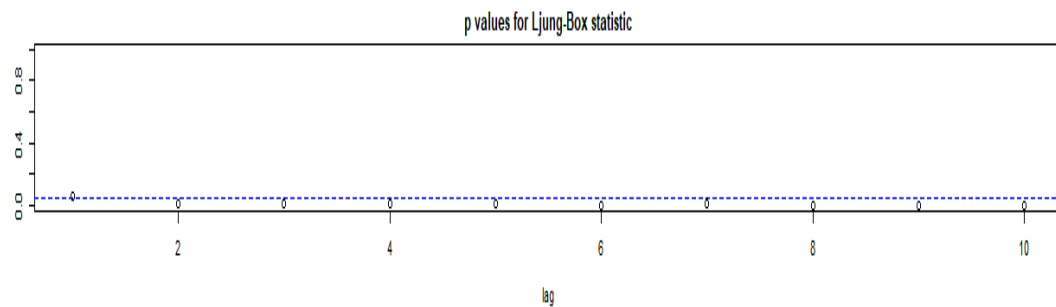


ACF PLOT

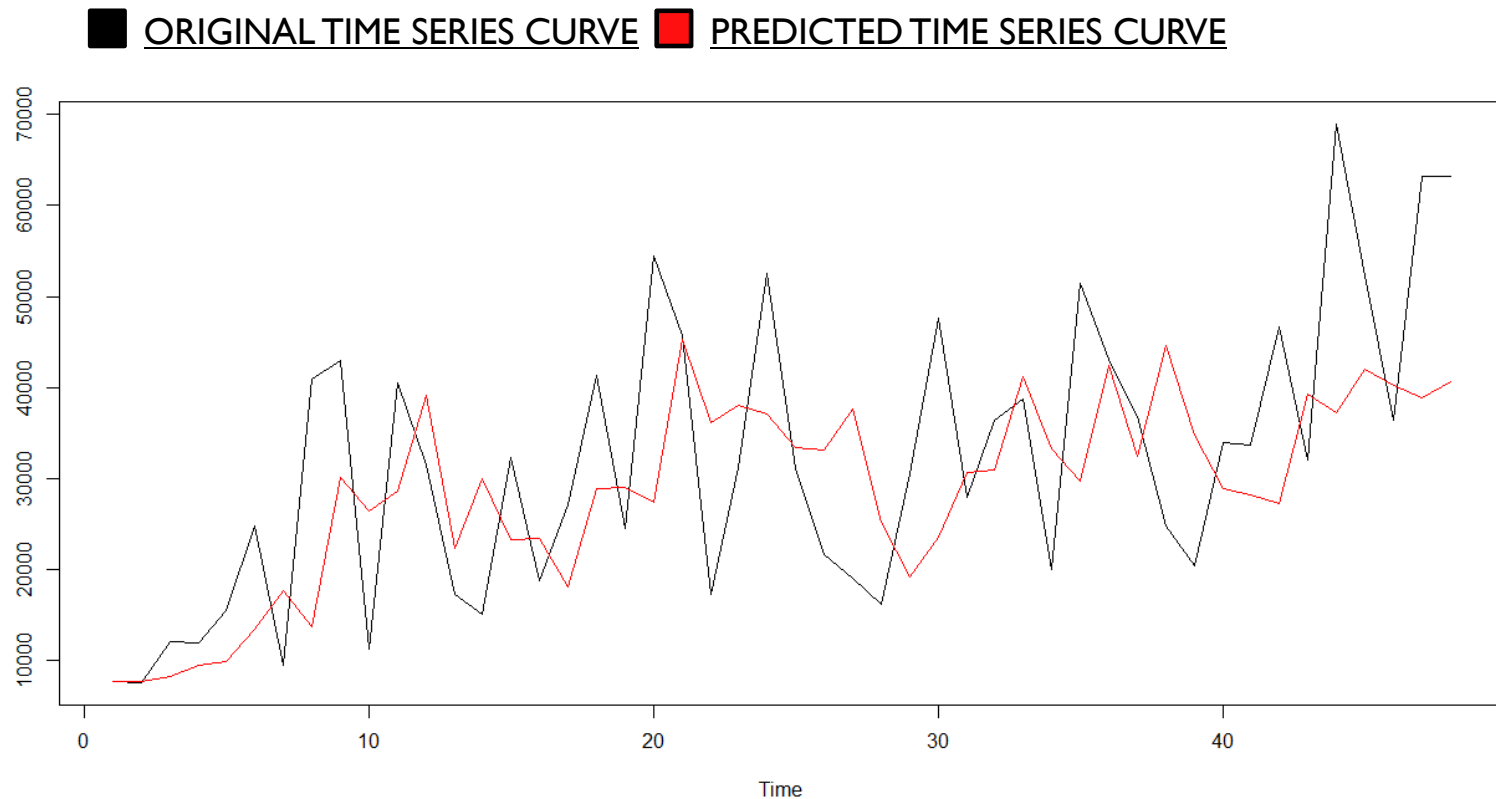


PACF PLOT

RESIDUAL PLOT



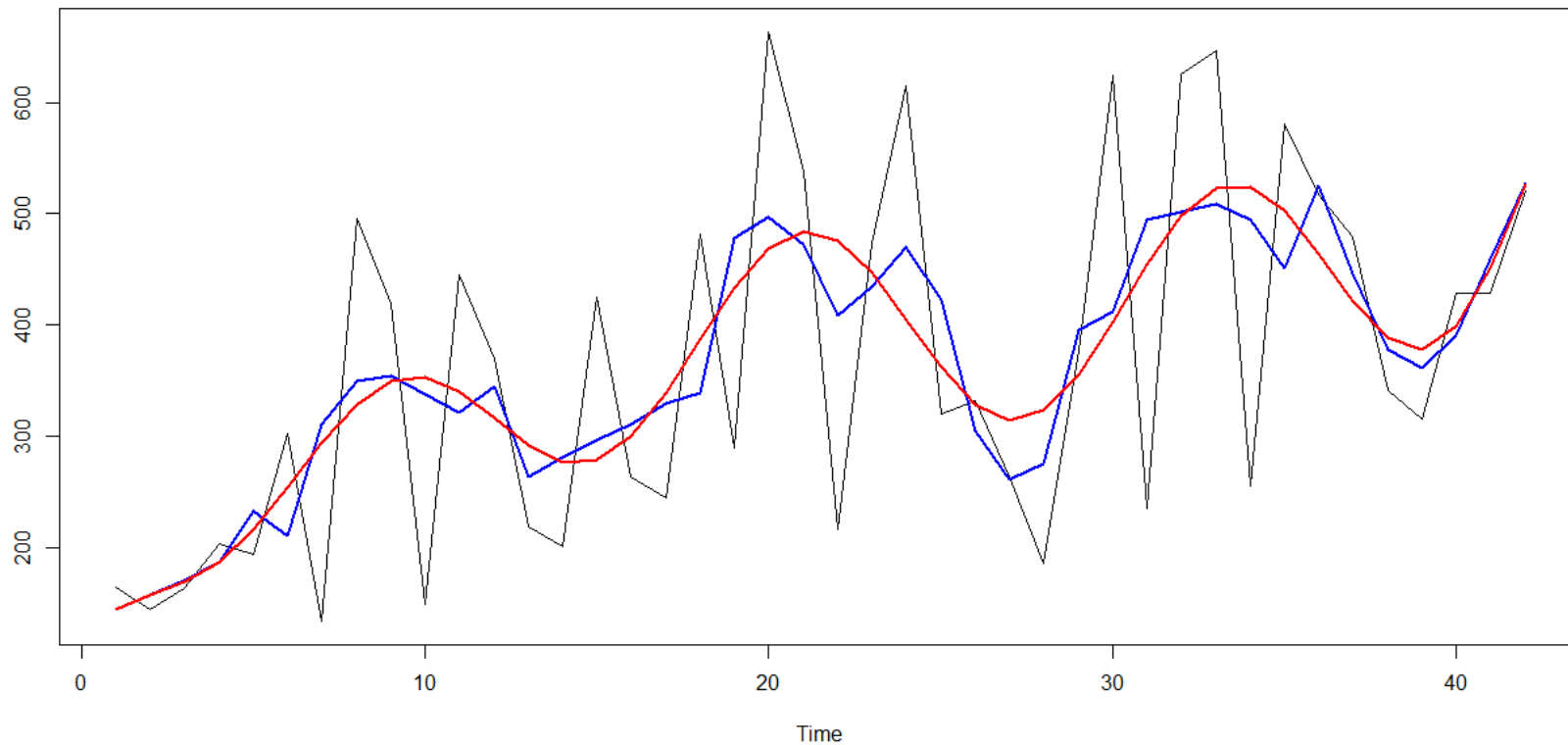
BEST MAPE VALUE AND COMPLETE FORECASTING GRAPH FOR EU CONSUMER SALES



MAPE Value : 28.926

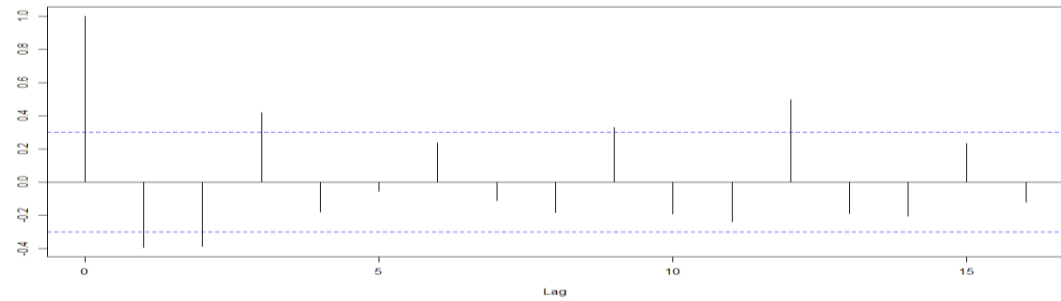
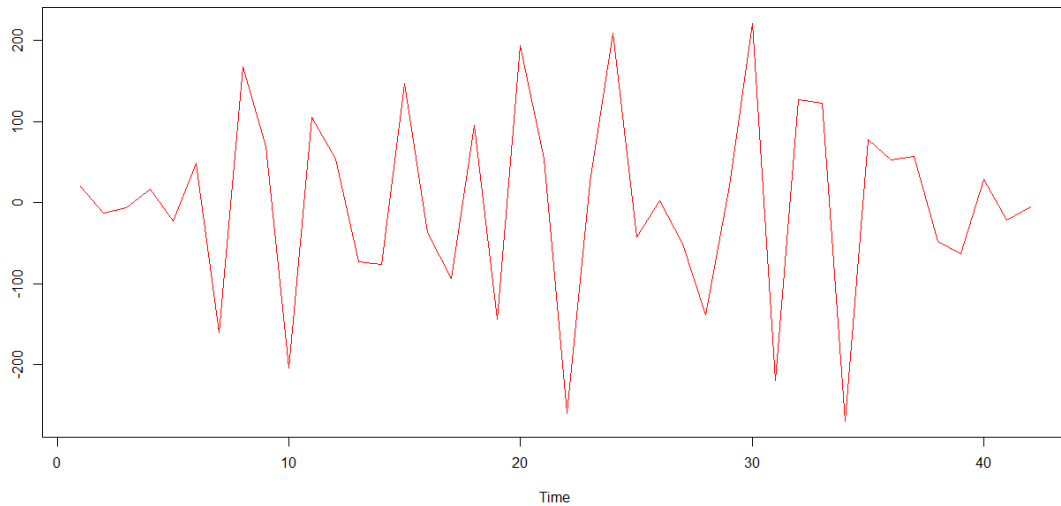
EU CONSUMER DEMAND GLOBAL TIMES SERIES

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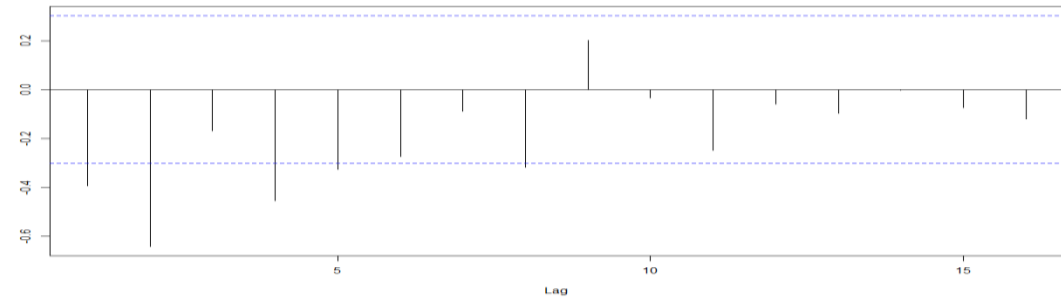


EU CONSUMER DEMAND LOCAL SERIES, ACF, PACF & RESIDUAL PLOTS

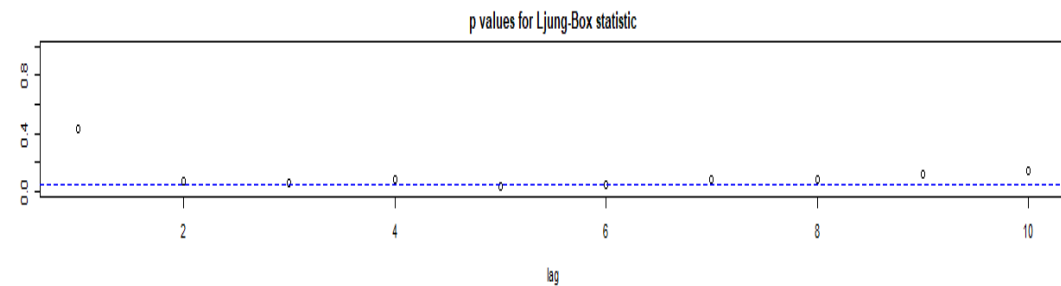
LOCAL TIME SERIES



ACF PLOT



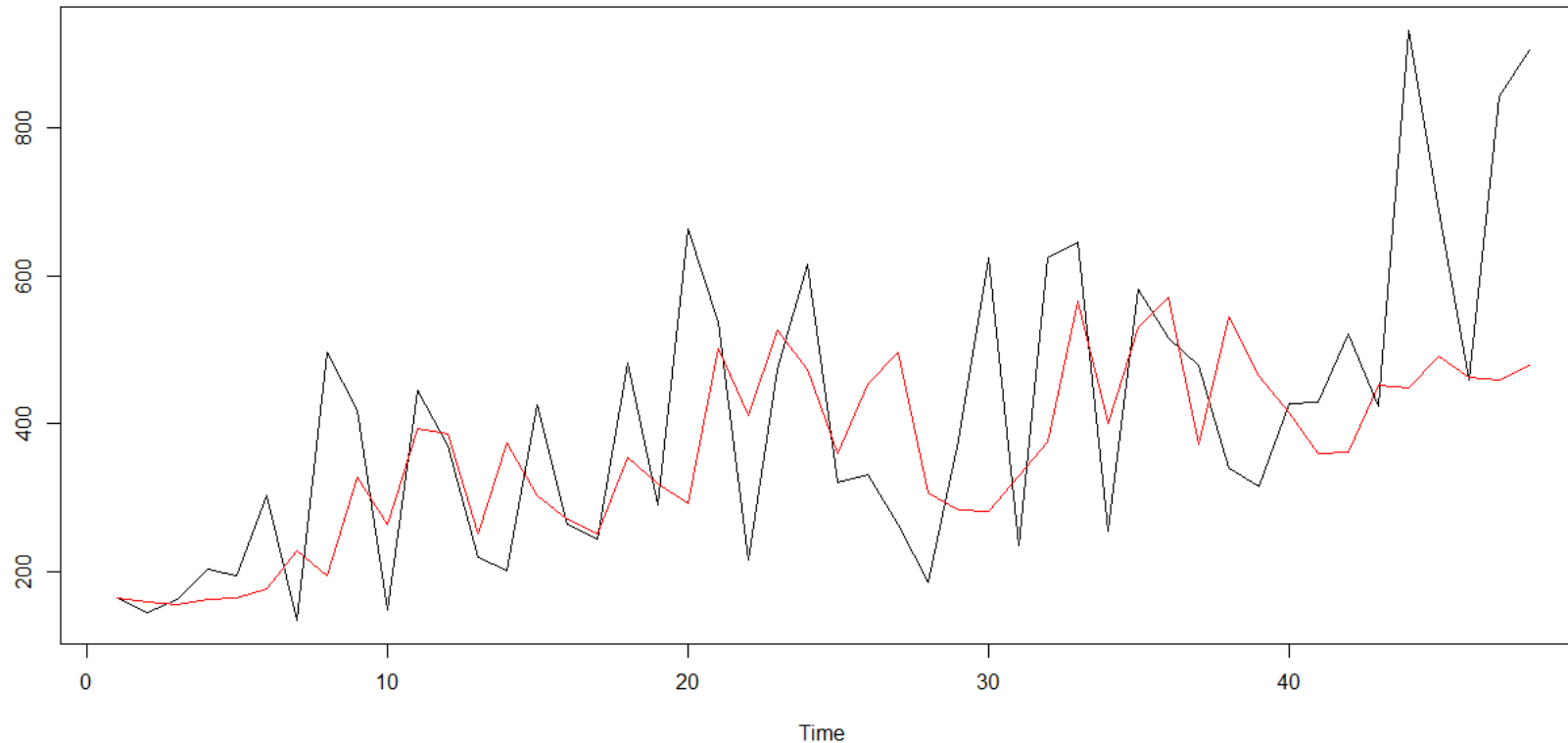
PACF PLOT



RESIDUAL PLOT

BEST MAPE VALUE AND COMPLETE FORECASTING GRAPH FOR EU CONSUMER DEMAND

■ ORIGINAL TIME SERIES CURVE ■ PREDICTED TIME SERIES CURVE



Best MAPE Value : 30.133

CONCLUSION

- Top performing segments for Global Mart – APAC Consumer and EU Consumer.
- Seasonal Behavior & Increasing trend noticed in sales across the selected market segments – APAC and EU based on past data.
- Similar Seasonal Behavior & Increasing trend noticed in demand across the selected market segments – APAC and EU based on past data.
- 4 key forecasts summary.
 - EU Consumer Sales exhibit a slow but steady increase in the upcoming months
 - Demand in the EU region under for Consumers, exhibit a rather slow but a steady increase for the forecasted months
 - APAC Consumer Sales prediction shows that Sales are most likely to remain steady over the next 6 months
 - Demand in the APAC region also shows a similar trend as APAC sale and predicts that Demand is most likely also to remain steady over the next 6 months