

# Retail-Giant Sales Forecasting Case Study

## SUBMISSION

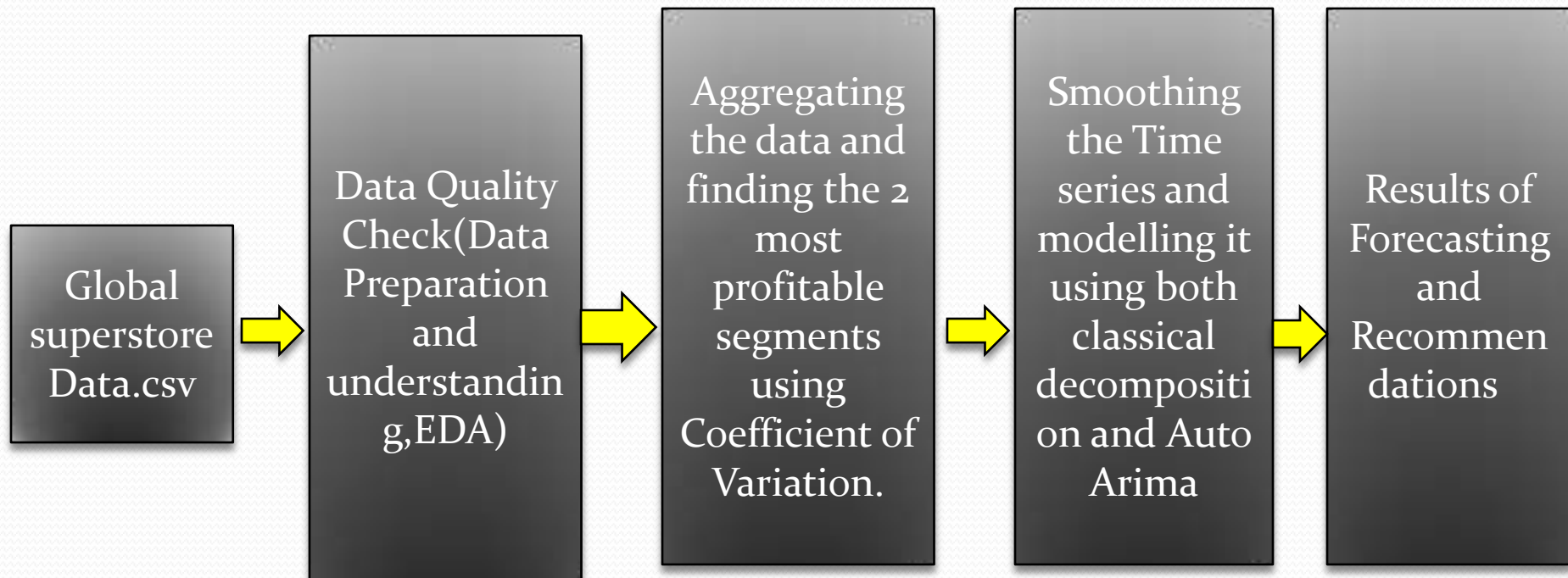
Presented by

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# Business Objective

- “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 in seven different market regions
- The data currently has the transaction level data, where each row represents a particular order made on the online store.
- The aim is to forecast the sales and the demand of the two most profitable markets and in respective segments, which will help in maintaining the revenue.

# Problem Solving Methodology



# Data Understanding

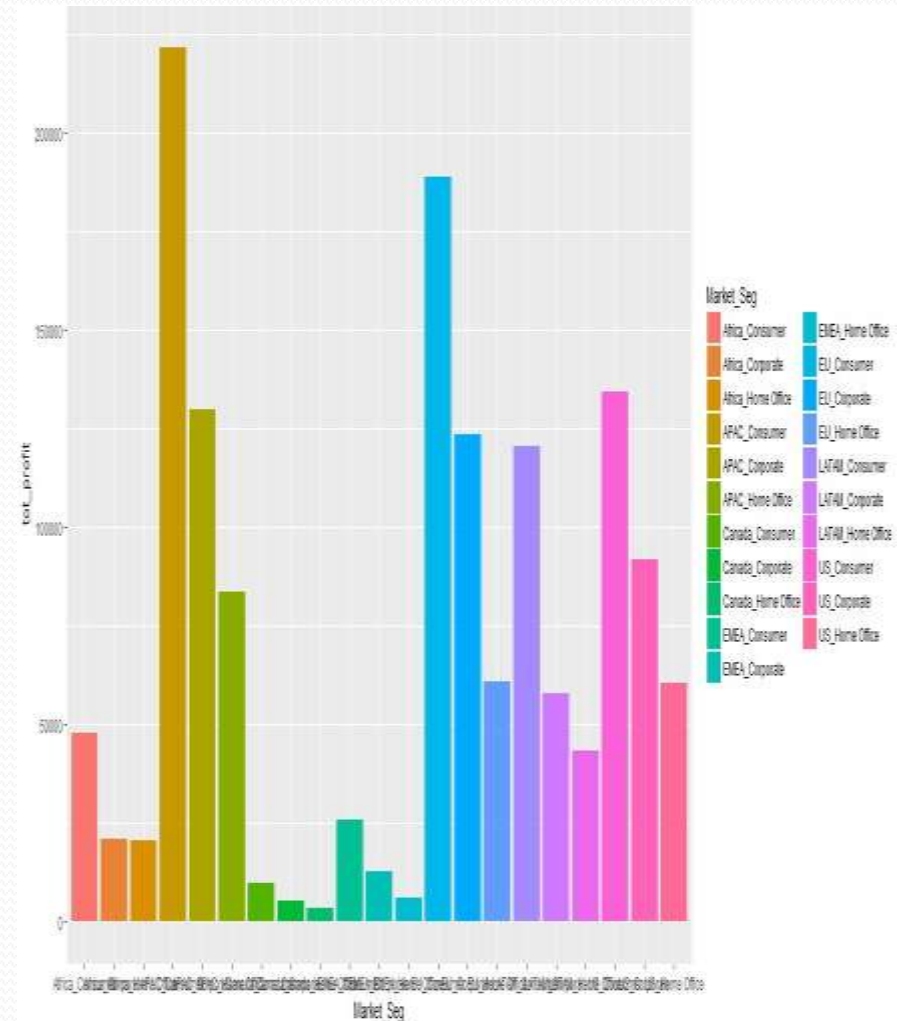
- 51290 transactions from 2011 – 2014
- Focusing mainly on month and year wise aggregated values of Sales, Profit and Quantity
- With 3 segments and in 7 market regions.

## Data Preparation

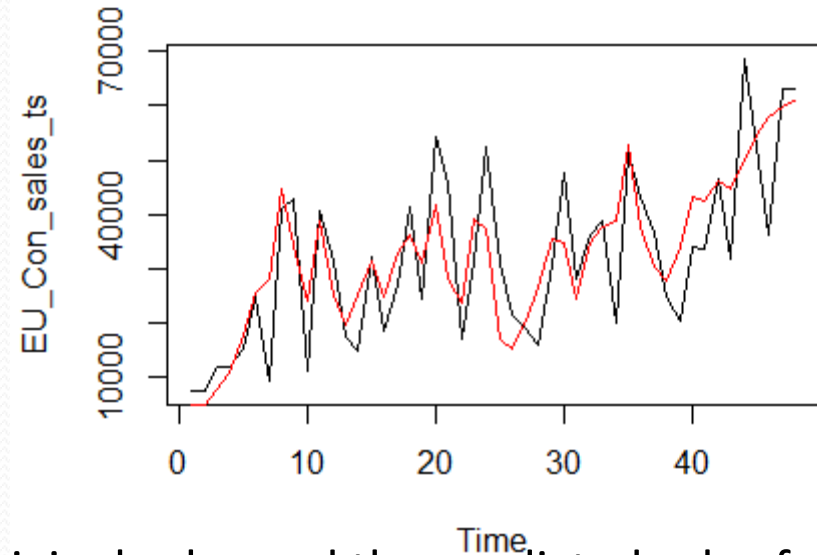
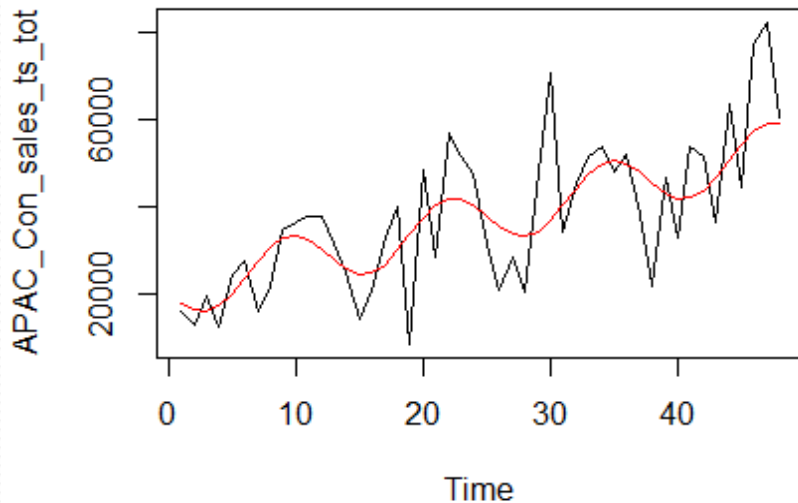
- Prepared the aggregated data with 21 market-segments
- Found the top 2 most profitable segments as APAC-Consumer and EU - Consumer by calculating Coefficient of Variation.

# Cumulative profit & CV value

- Plot showing the Cumulative profit for all the 21 segments with (7 markets and 3 segments)
- It is clearly visible that APAC and EU market regions and Consumer segment is most profitable.
- Its CV value is also around 420 – 470. Based on it, we modelled 4 time series- Sales and Quantity for each market - segment



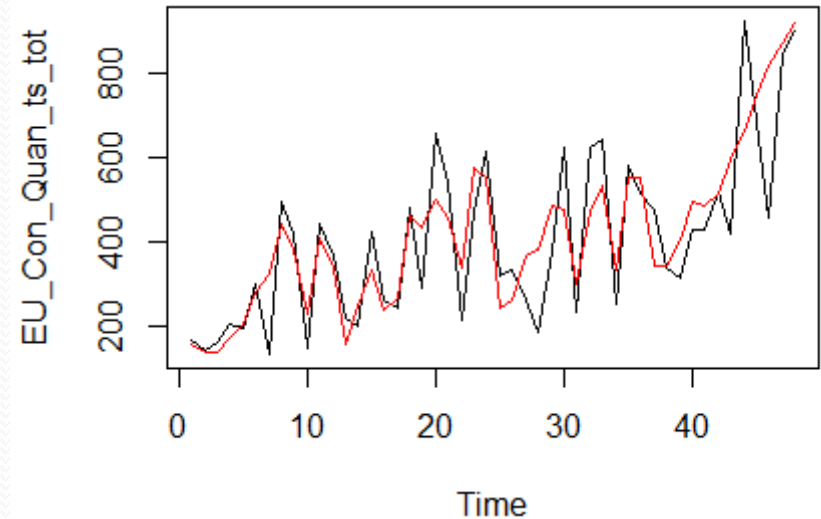
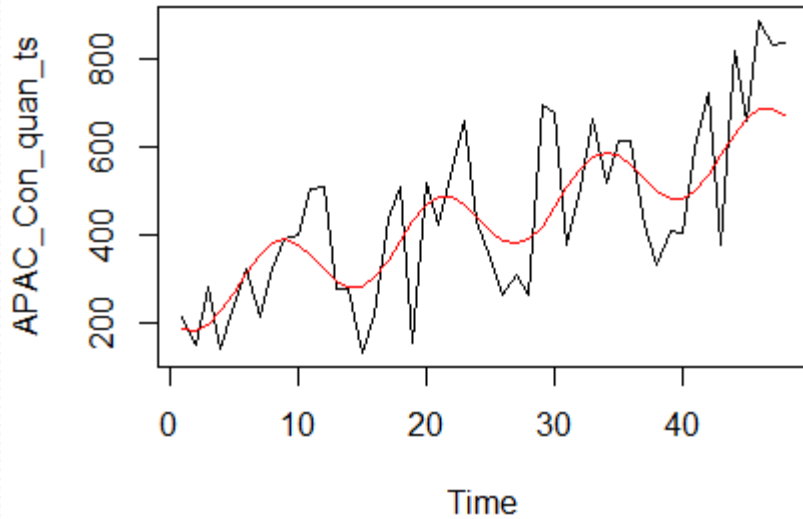
# Sales Prediction



- The graphs above are showing the original sales and the predicted sales for the two market segments APAC\_Consumer and EU\_Consumer for all the 48 months.
- These modelling is done based out of classical decomposition
- Each with MAPE values as below

APAC_Consumer_sales	23.13734
EU_Consumer_sales	21.13183

# Quantity Prediction

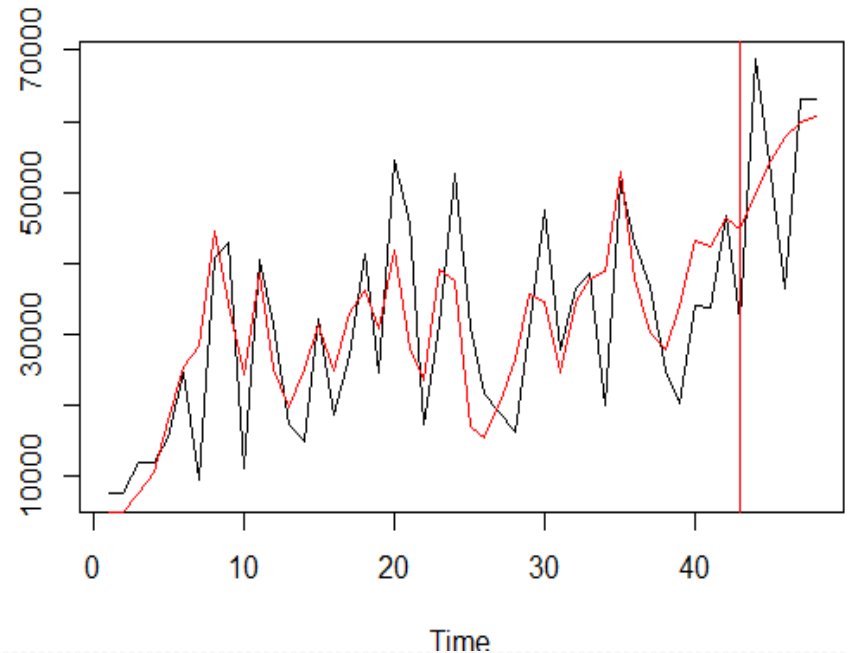
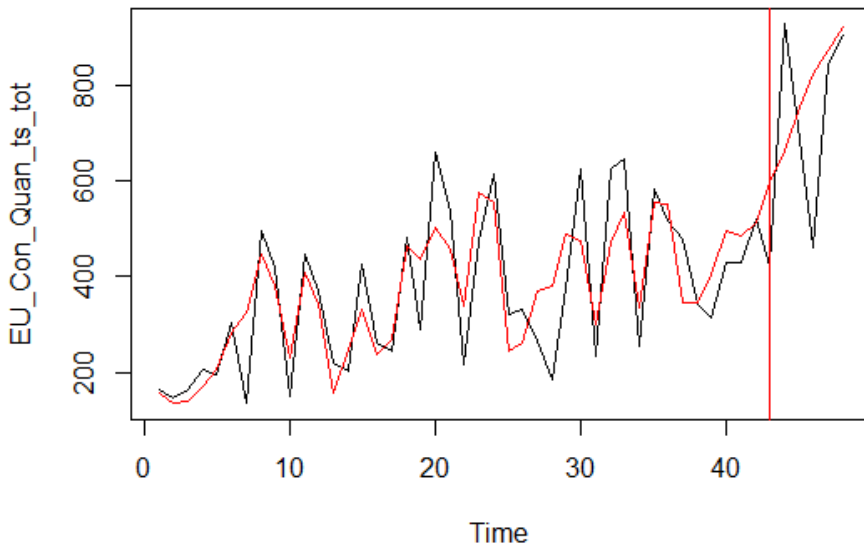


- The graphs above are showing the original Quantity and the predicted Quantity for the two market segments APAC\_Consumer and EU\_Consumer for all the 48 months.
- These modelling is done based out of classical decomposition
- Each with MAPE values as below

APAC_Consumer_Quantity	22.92209
EU_Consumer_Quantity	27.36632

# Observations of validation for 6 months

## EU-Consumer data

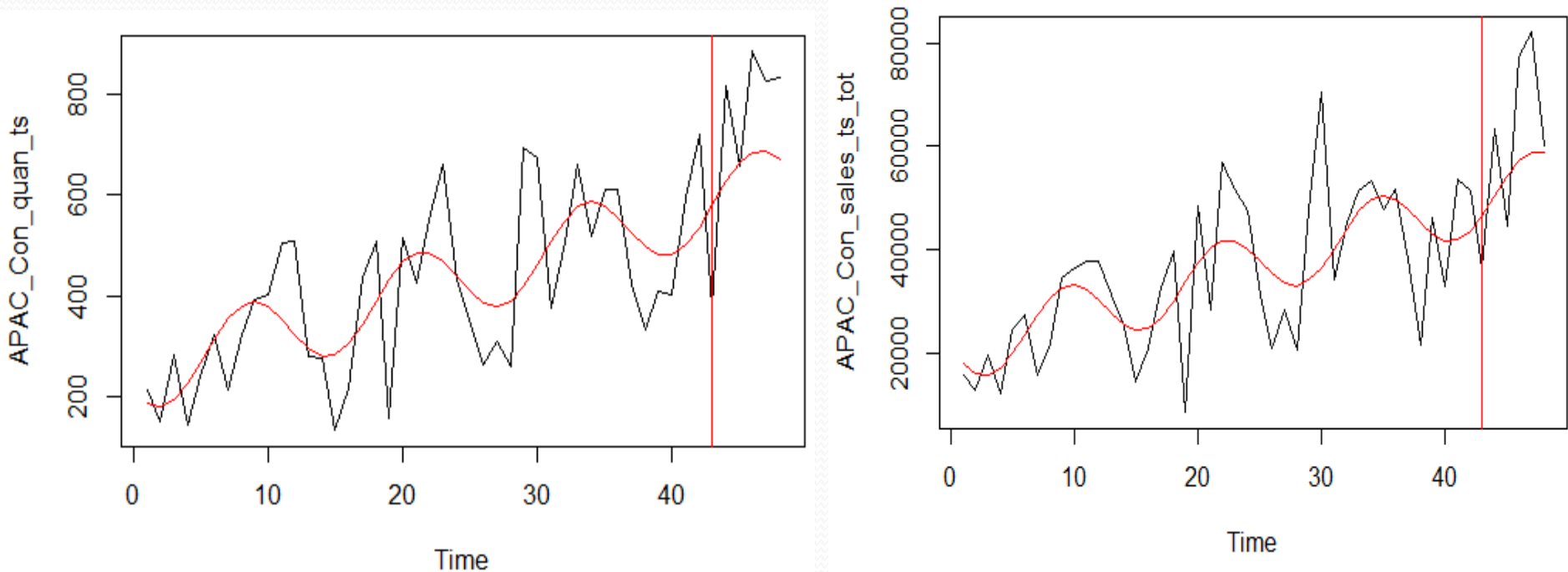


The above graphs are the prediction for the 6 months using the validation data for Sales and quantity for EU – Consumer segment



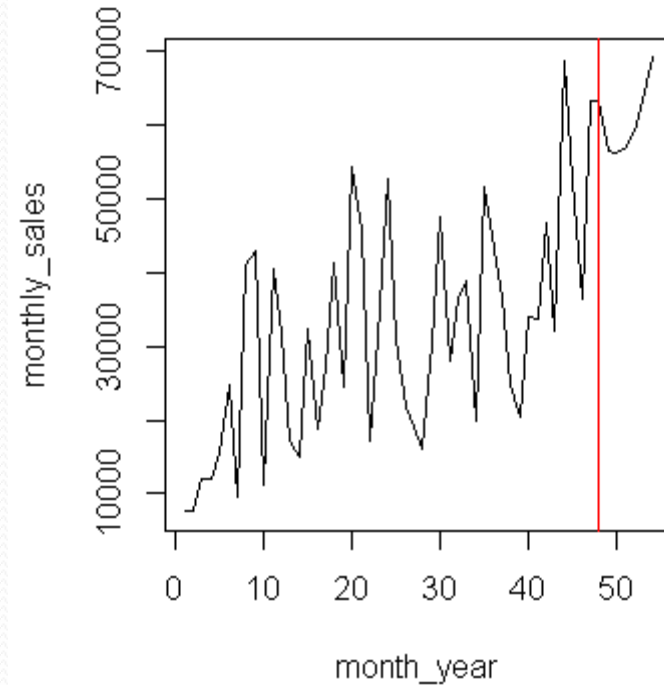
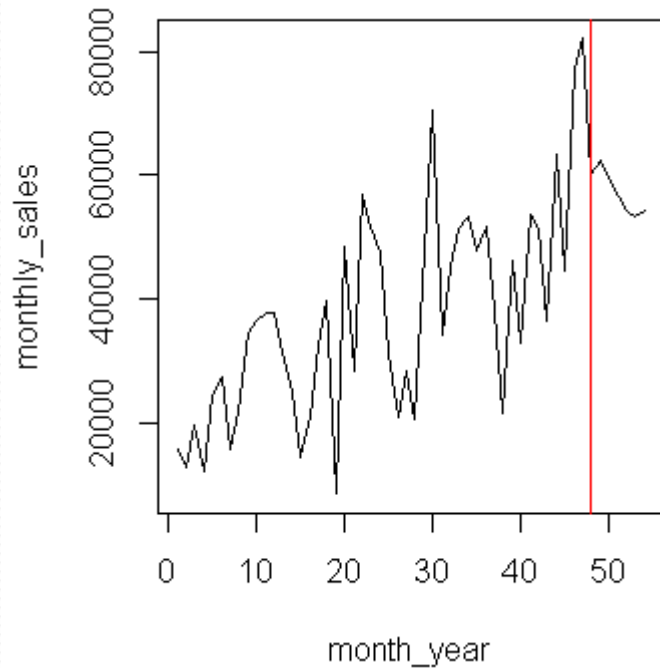
# Observations of validation for 6 months

## APAC – Consumer data



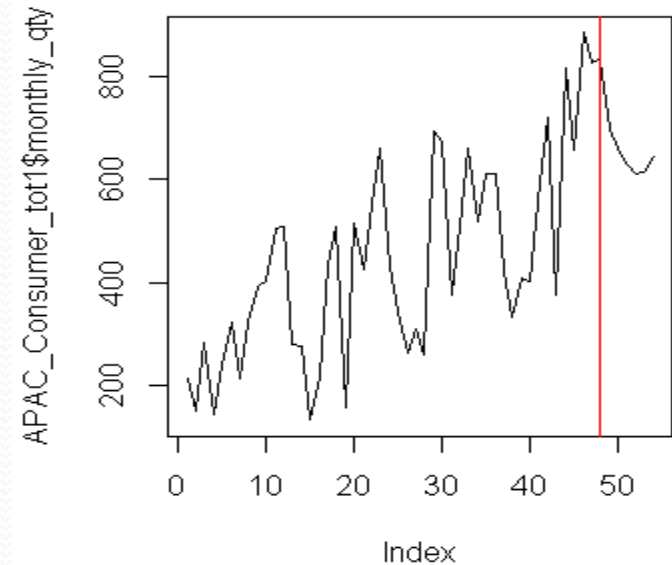
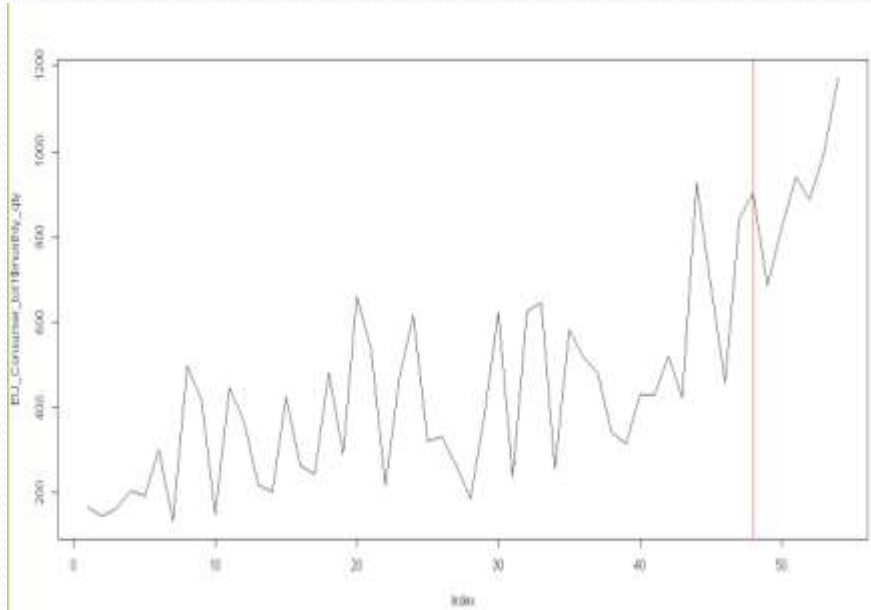
The above graphs are the prediction for the 6 months using the validation data for Sales and quantity for APAC– Consumer segment

# Forecasted values of sales



- Above are the forecasted sales values for the next 6 months which we are predicting without data. For both the market segments

# Forecasted values of quantity,



- Above are the fore casted sales values for the next 6 months which we are predicting without data. For both the market segments

# Conclusions and Recommendations

- Based on data provided we helped “Global Mart” in identifying 2 most profitable market segments as APAC Consumer and EU Consumer and modelled them using classical decomposition.
- These are 4 key forecasts on test data are as follows:
  - a. APAC Consumer Sales is likely to rise in next 6 months with small fluctuations.
  - b. APAC Consumer Quantity is likely to rise steeply in coming 6 months.
  - c. EU Consumer Sales may show the slow rise in coming months.
  - d. EU Consumer Quantity is likely to drop during initial 1 or 2 months & then rise rapidly in next 3 months, eventually reaching a plateau.