Retail Giant CASE STUDY

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Business Case

"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. The store caters to 7 different market segments and in 3 major categories

Business Objective.

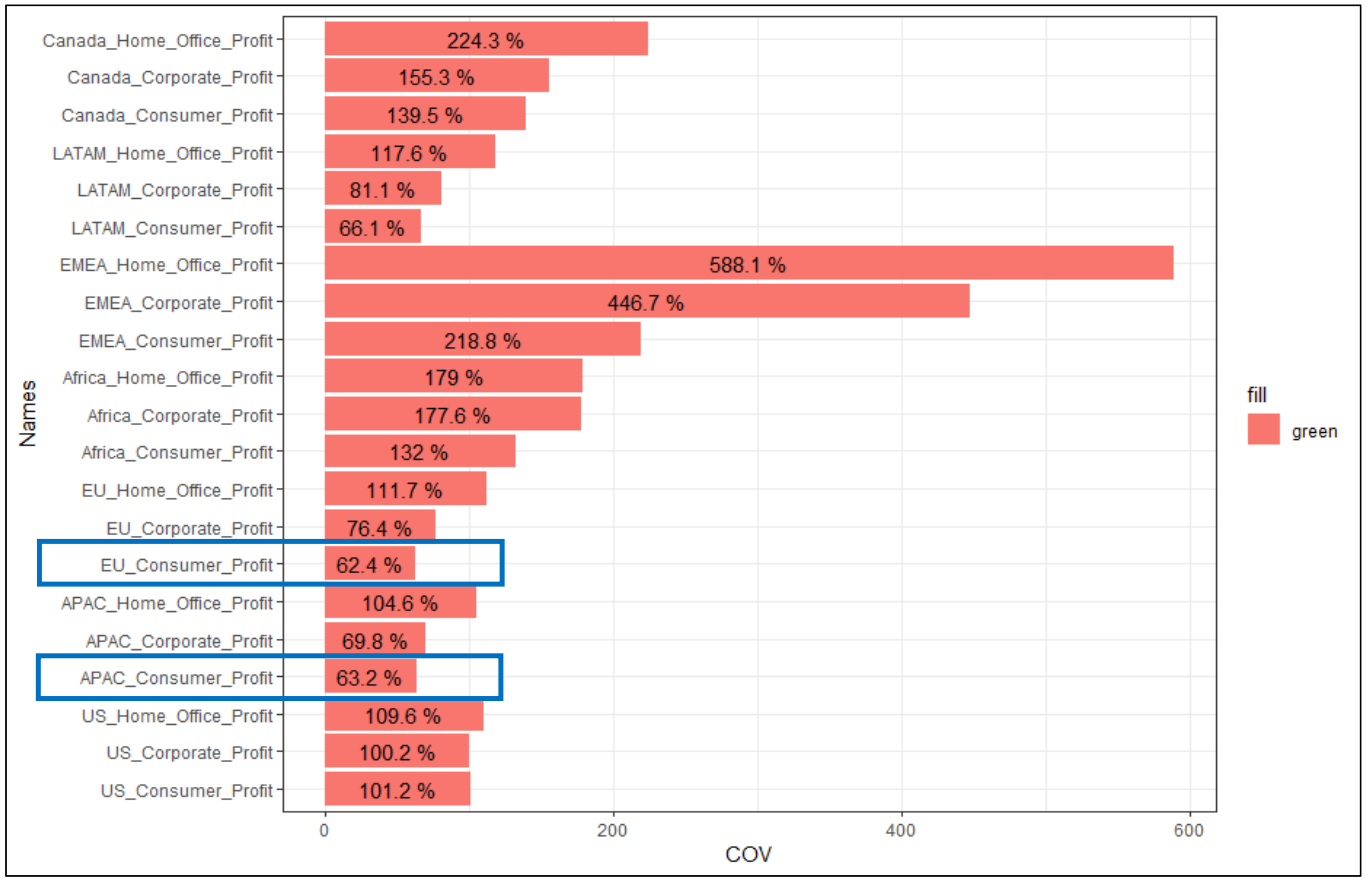
Finalize the plan for the next 6 months.

- Find out 2 most profitable (and consistent) segment from all the segments.
- Forecast the sales and the demand for the next 6 months, that would help you manage the revenue and inventory accordingly.

APPROACH FOLLOWED

1. Import files and perform data cleaning and missing value inclusion
2. Segment the whole dataset into the 21 subsets based on the market and the customer segment level.
3. Aggregate the data into 21 market segments
4. Find the 2 most profitable and consistently profitable segments
5. Forecast the sales and quantity for the next 6 months
    1. smoothen the data
    2. classical decomposition
    3. auto ARIMA
6. Forecast the sales/demand for next 6 months using this model

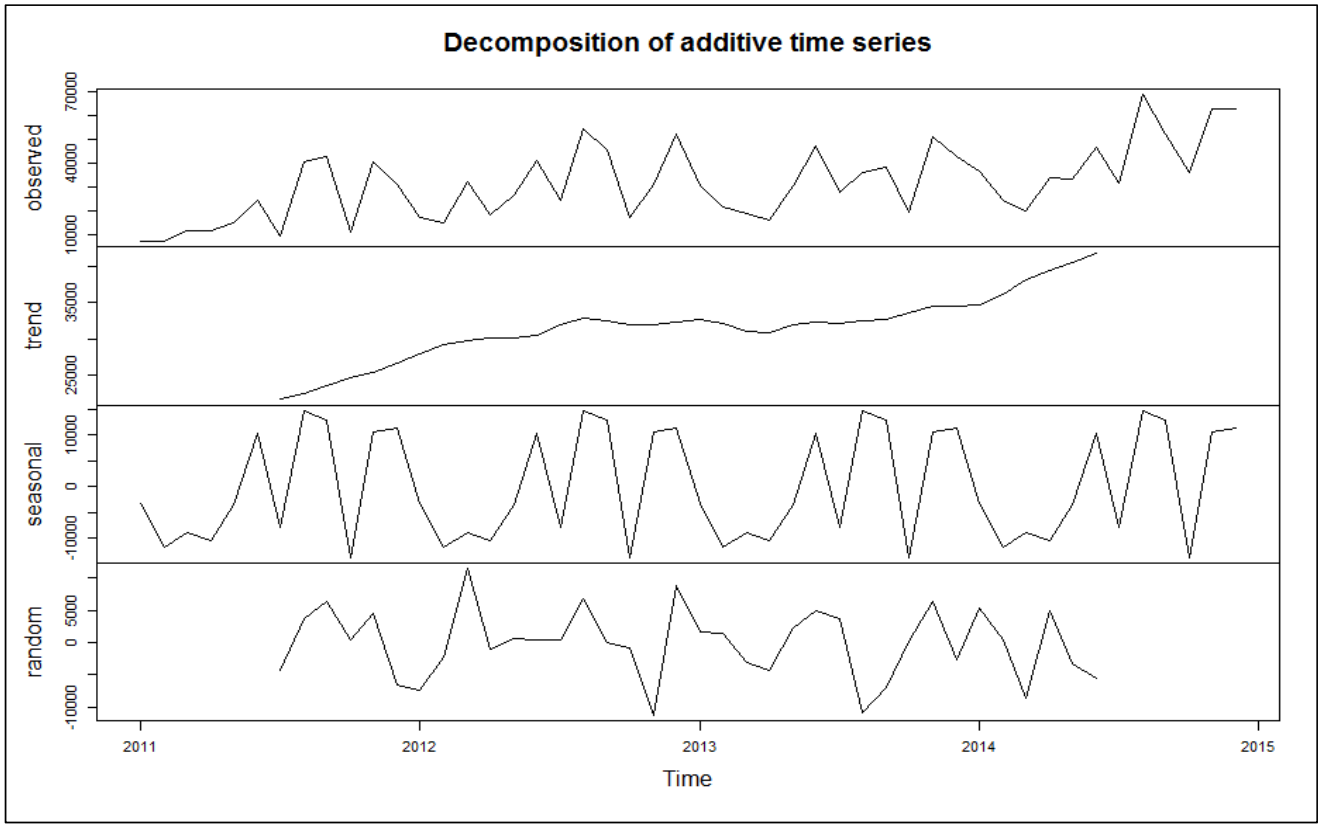
Co-efficient of Variation



- Co-efficient of Variation (CV) is the ratio of the standard deviation to the mean. The higher the CV, the greater the level of dispersion around the mean. The lower the value of the CV, the more precise the estimate.

- **EU Consumer and APAC Consumer are to sectors identified with best CVs**

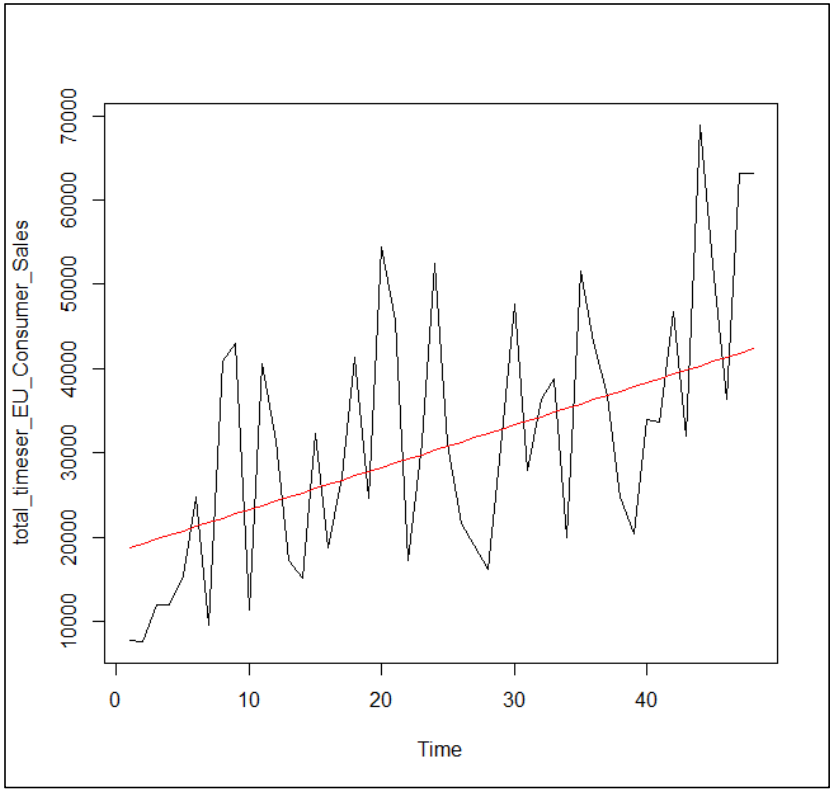
EU Consumer Sales Trend Analysis

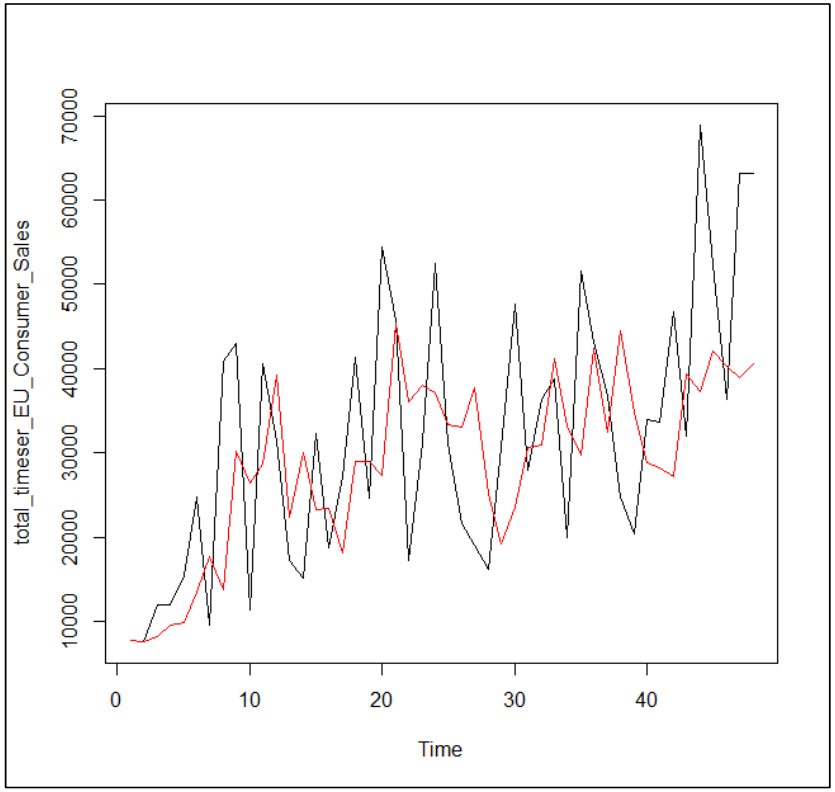


- Decomposition of EU consumer sales time series over 4 years shows a linear upward trend.
- There is a seasonal component observed every 12 months where sales go up during year end and down post new year.
- There is no seasonal trend observed in the form of a sinusoidal form.

Seasonal trend indicates increase in sales during Christmas and New Year which is local to Europe

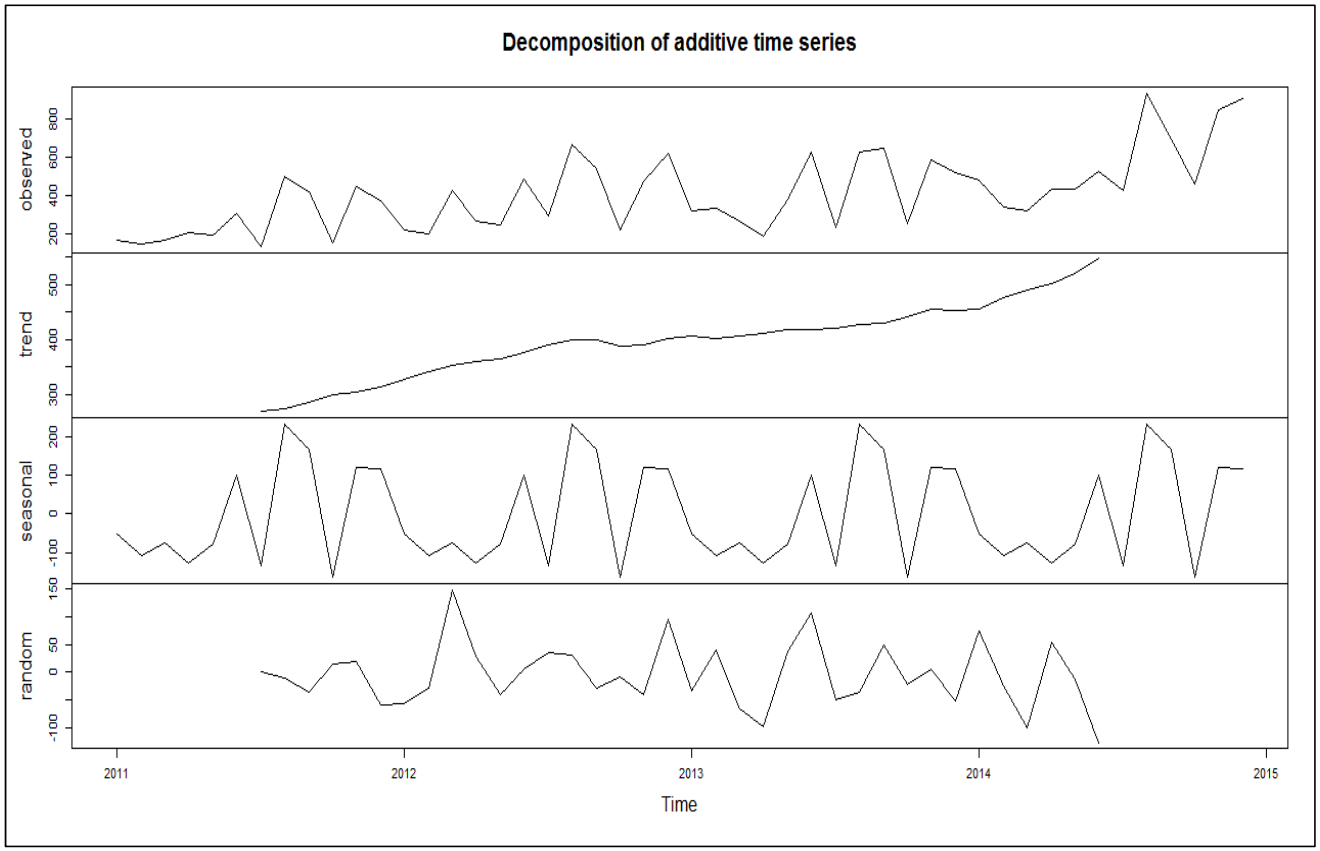
EU Consumer Predicted Sales





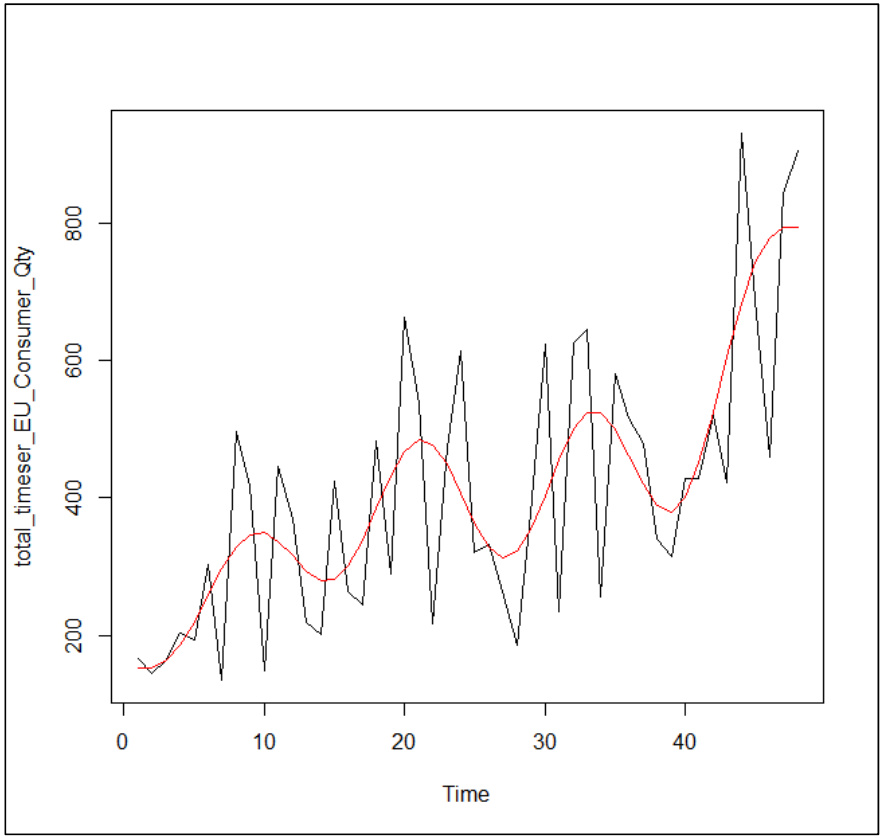
We can see that sales forecast is best represented as a linear upward trend

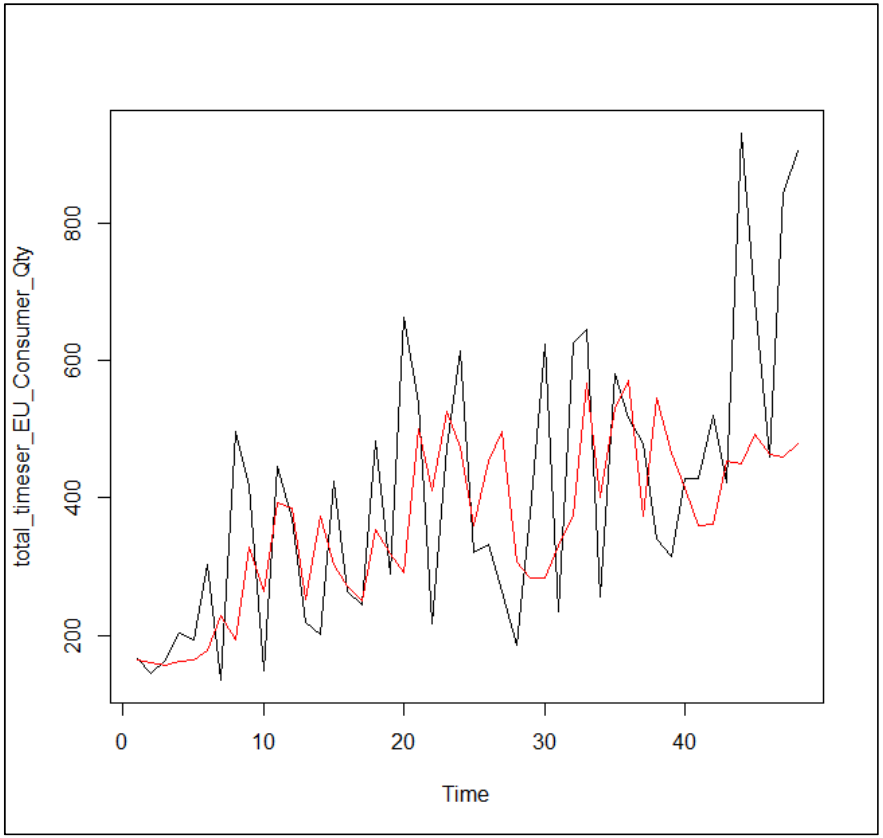
EU Consumer Qty Trend Analysis



- Decomposition of EU consumer qty time series over 4 years shows a linear upward trend.
- There is a seasonal component observed every 12 months where qty goes up during year end and down post new year.
- There is no seasonal trend observed in the form of a sinusoidal form.

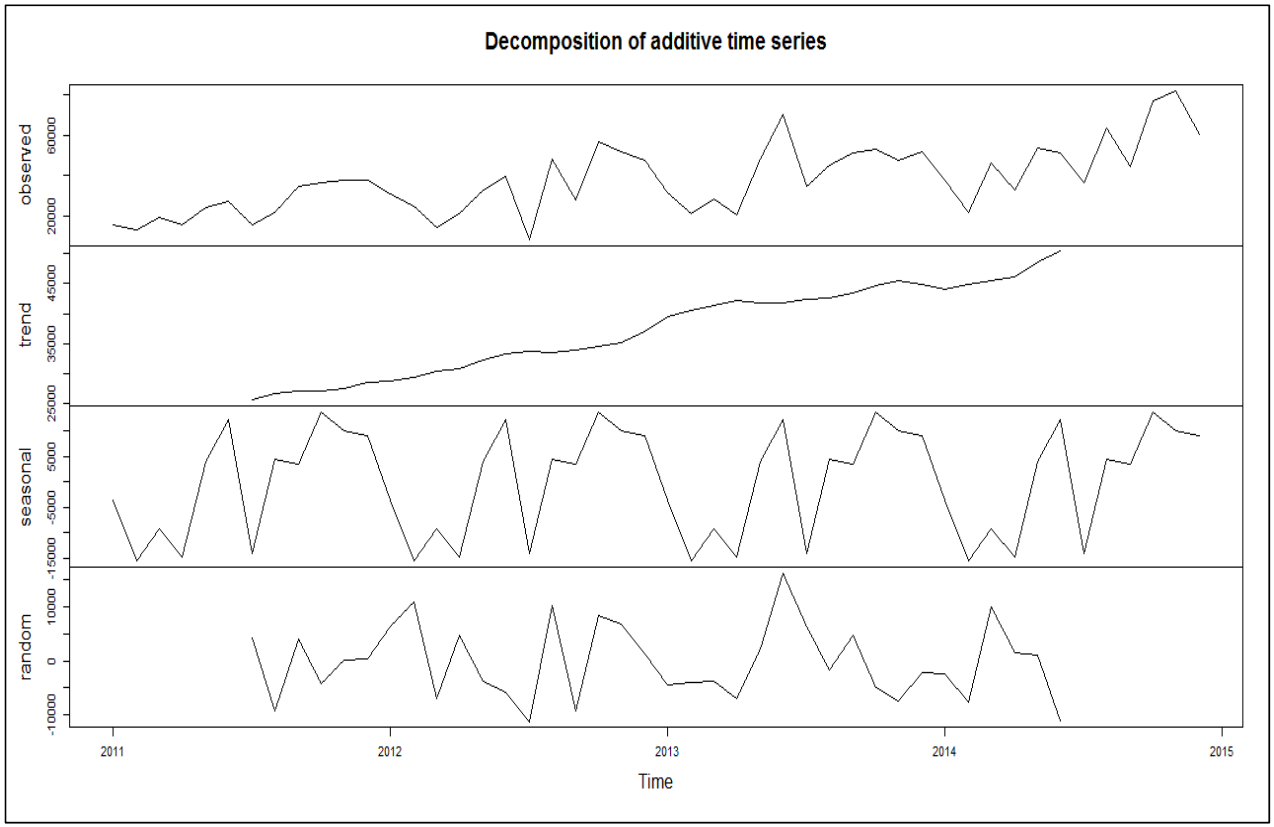
EU Consumer Predicted Qty





We can see that qty forecast is best represented as a sinusoidal upward trend

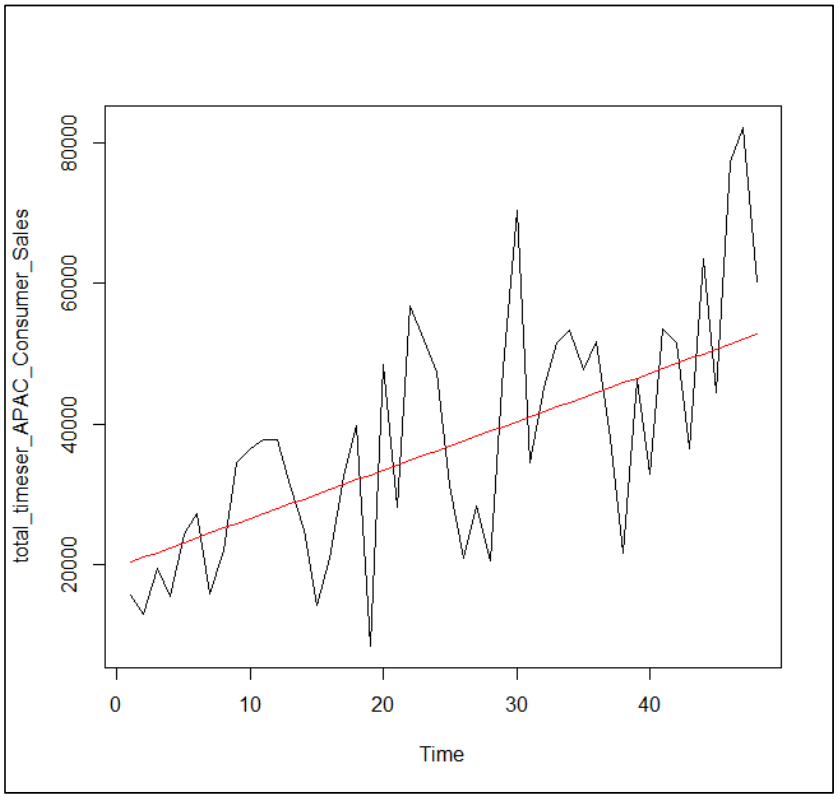
APAC Consumer Sales Trend Analysis

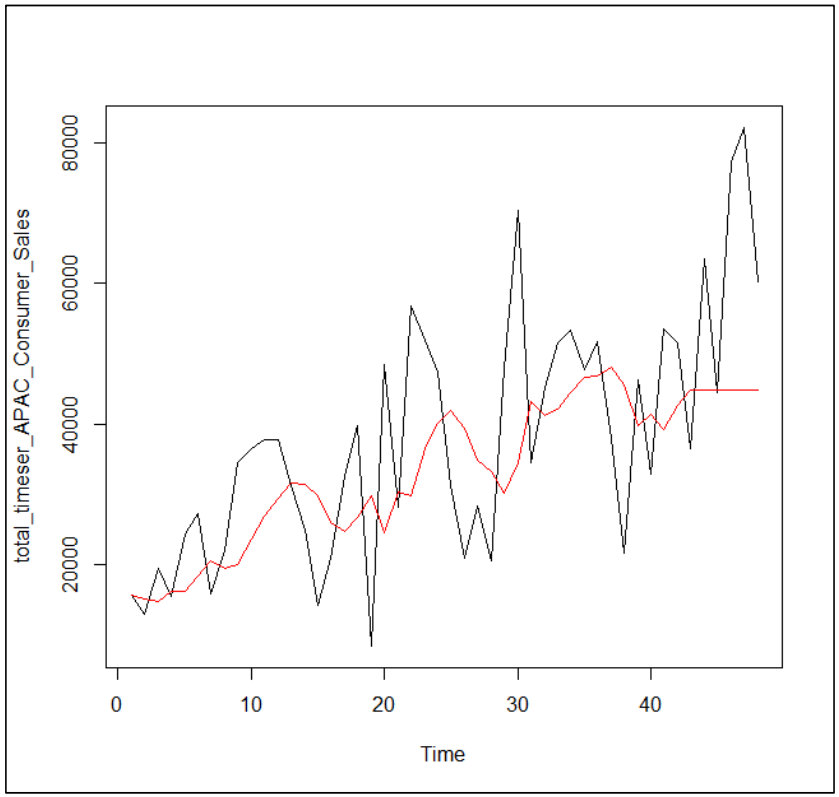


- Decomposition of EU consumer sales time series over 4 years shows a linear upward trend.
- There is a seasonal component observed every 12 months where sales go down during year end and pick later in the year.
- There is no seasonal trend observed in the form of a sinusoidal form.

Seasonal trend indicates increase in sales during Chinese new year and Diwali local to APAC

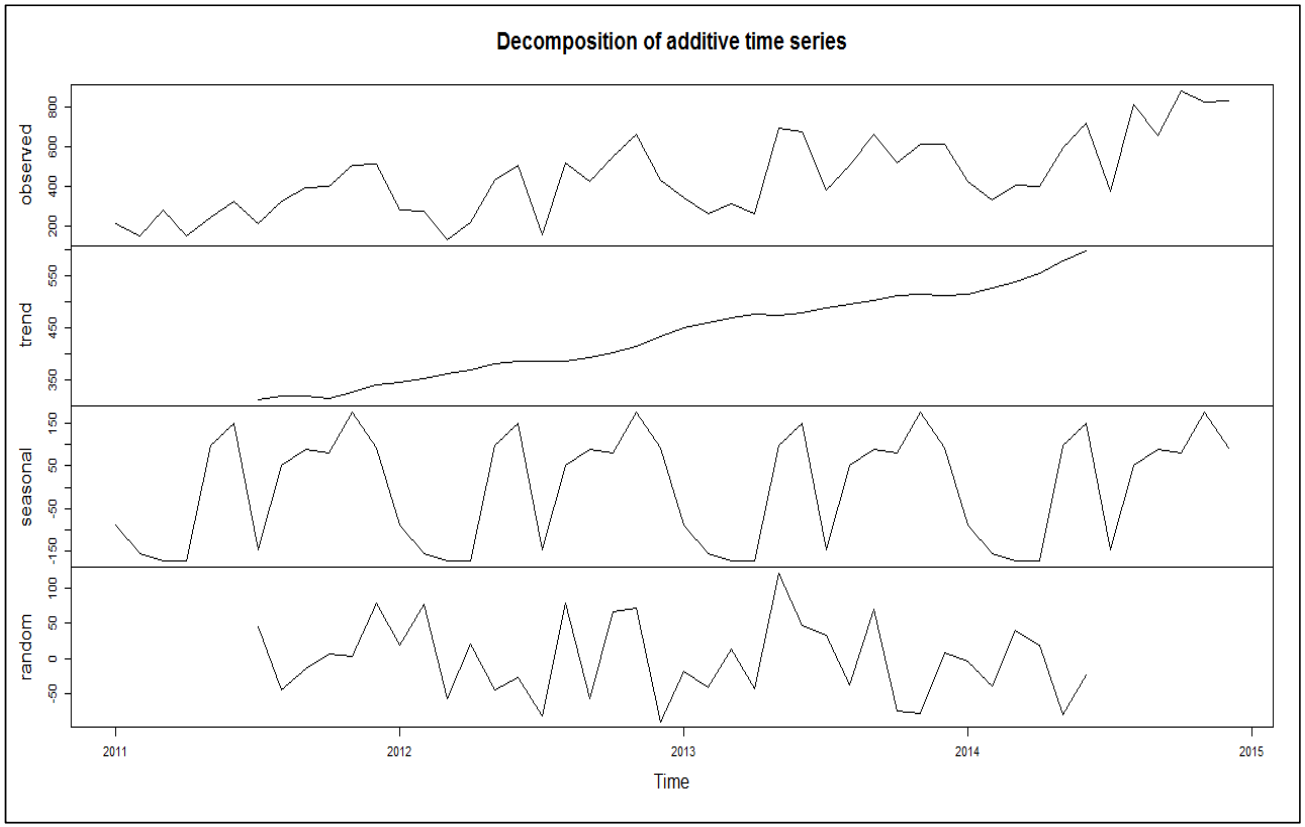
APAC Consumer Predicted Sales





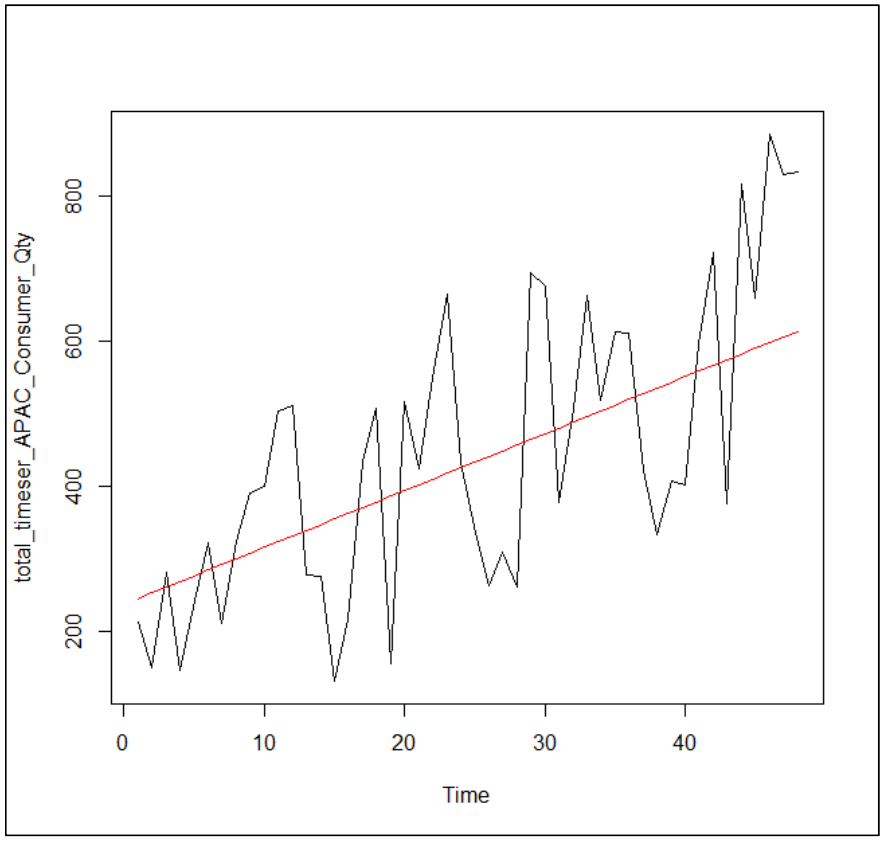
We can see that sales forecast is best represented as a linear upward trend. Prediction using auto.arima shows a moving average of 1 which is why the forecast is flat for last 6 months.

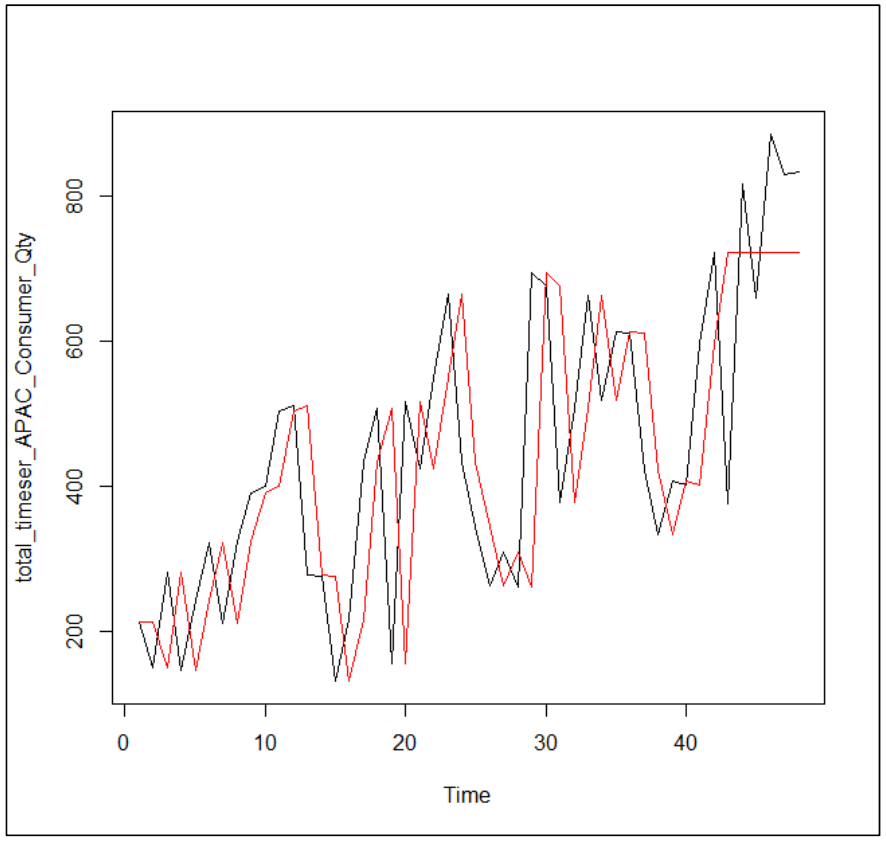
APAC Consumer Qty Trend Analysis



- Decomposition of EU consumer qty time series over 4 years shows a linear upward trend.
- There is a seasonal component observed every 12 months where qty go down during year end and pick later in the year.
- There is no seasonal trend observed in the form of a sinusoidal form.

APAC Consumer Predicted Qty





We can see that sales forecast is best represented as a linear upward trend. Prediction using auto.arima shows a moving average of 1 which is why the forecast is flat for last 6 months.

CONCLUSIONS

- EU Consumer and APAC consumer segments are the best suited for maximum profitability.
- EU Consumer sales seasonal trend indicates increase in sales during
  - Christmas which is local to all European countries.
  - New Year which is local to all European countries.
- EU Consumer sales forecast is best represented as a linear upward trend year on year.
- EU Consumer qty forecast is best represented as a sinusoidal upward trend.
- APAC Consumer sales seasonal trend indicates increase in sales during
  - Chinese new which is local to China
  - Diwali which is local to India.
- APAC Consumer sales forecast is best represented as a linear upward trend.
- APAC Consumer Qty forecast is best represented as a linear upward trend.