TIME SERIES ANALYSIS CASE STUDY

SUBMISSION

Group Members :

1. Vivek Loganathan
2. Salman Salim
3. Shailendra Kumar
4. Usha Hariram

Case Study : Abstract

The Main Aim of the Case Study is to to forecast the sales and the demand of a 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. for the next 6 months, that would help you manage the revenue and inventory accordingly.

Case Study : Problem solving methodology

1.Business Understanding :

Global mart is a international super store having Products in Consumer ,Corporate, Home office around 7 different markets

2.Data Understanding :

Data Contains shipment details including Location, Date of shipping, sales and profit

3.Data Analysis :

From Data EU & APAC are the most profitable Markets in Consumer Segment

We Divide the data into 21 Categories based on Market and Region

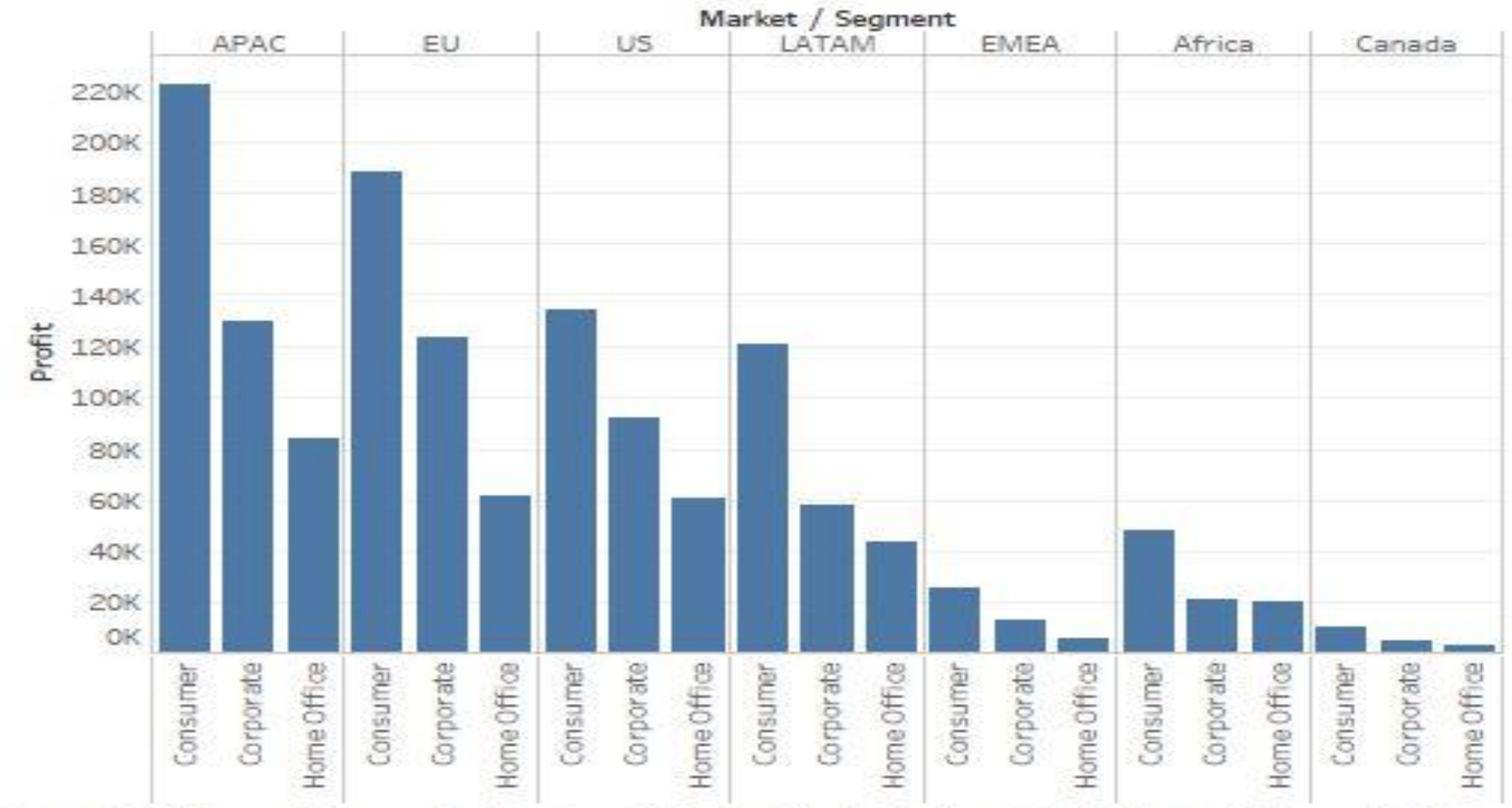
Took two most profitable region as APAC & EU

4.Results :

Data Conclusion is our final Result

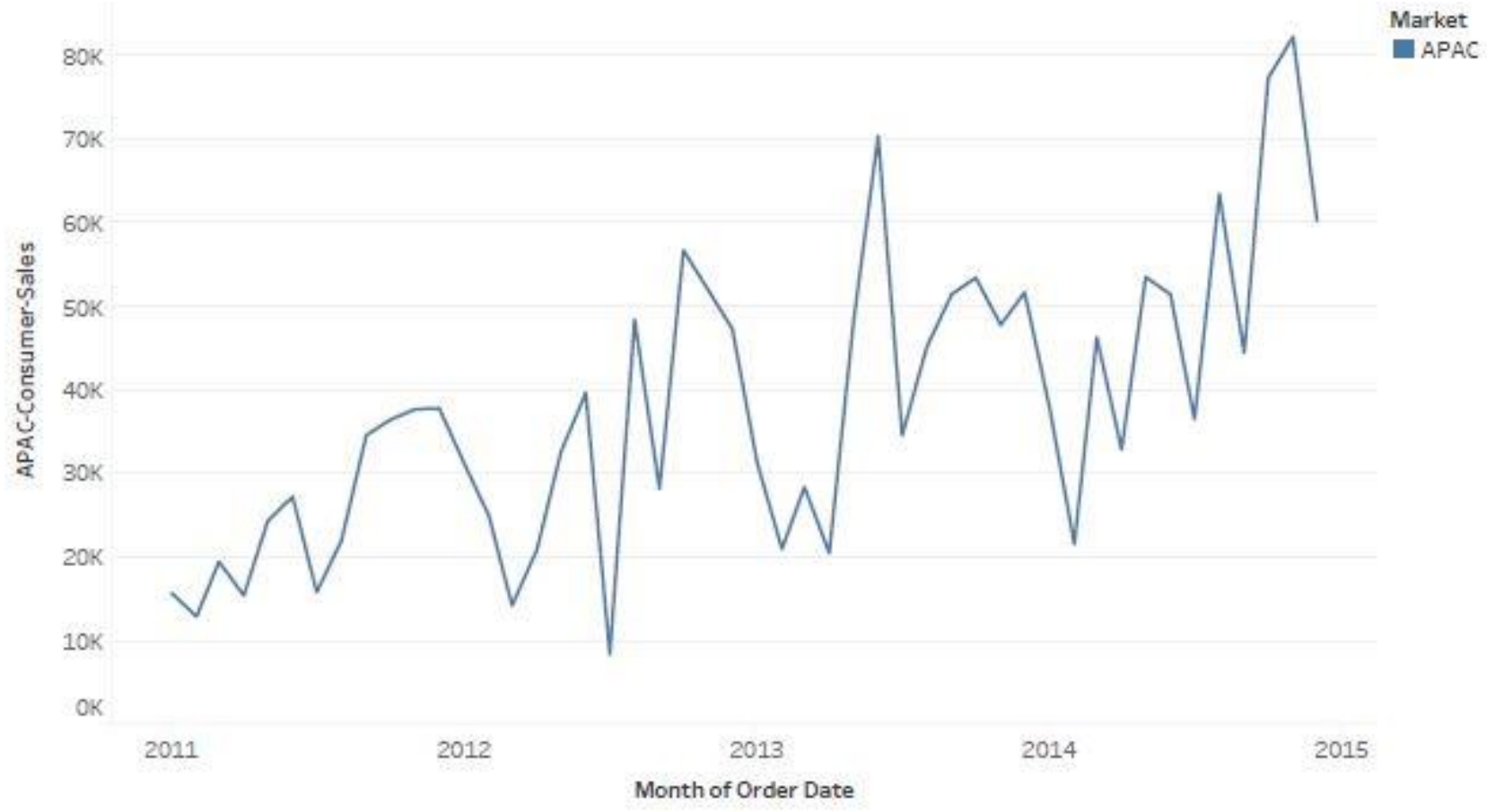
Forecasted Sales and quantity of EU & APAC using ARIMA & Simple Decomposition

Market Segment vs Profit Analysis



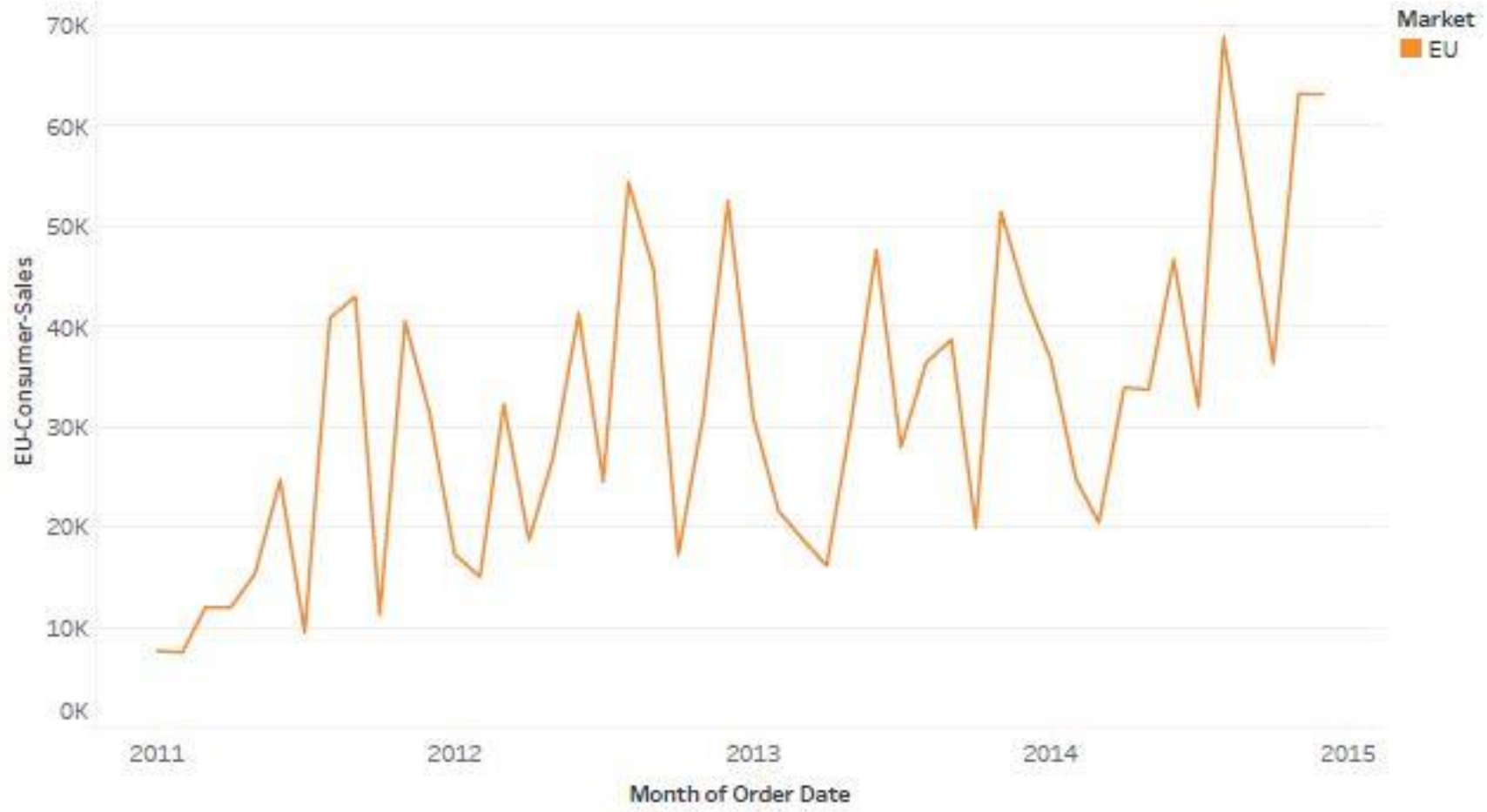
Sum of Profit for each Segment broken down by Market. The view is filtered on Market, which keeps 7 of 7 members.

APAC REGION SALES ANALYSIS



The trend of sum of Sales for Order Date Month. Color shows details about Market. The data is filtered on Segment, which keeps Consumer. The view is filtered on Market, which keeps APAC.

EU REGION SALES ANALYSIS



The trend of sum of Sales for Order Date Month. Color shows details about Market. The data is filtered on Segment, which keeps Consumer. The view is filtered on Market, which keeps EU.

Model Building And Model Evaluation

Using ARIMA Model and Simple Decomposition method the Values are Forecasted and the model building steps as contains

*converting the time series to a dataframe
*Fitting a multiplicative model with trend and seasonality to the data,
*Seasonality will be modeled using a sinusoid function
*Predicting the global values of the series - Seasonality and trend
*Plotting the globally predictable part

Using MAPE the following Evaluation Techniques are Done

*Making the Predictions for Last Six Months
*And Find the Accuracy of the Model
* The Comparison of Actual and Predicted Values are Plotted

Data Analysis Conclusion

Finally, the following are the conclusions of our Analysis –

ARIMA model out performs the Decomposition method in most of the forecasting. As Decomposition method is manually done and requires various parameters for better forecasting.

If we had more of the past data, forecasted values could have turned out better,
Also, selecting the appropriate window size plays a crucial role for forecasting the value.

In our case local component was absent, therefore predicted based on seasonality and trend i.e. through linear regression function.

THANK YOU