# Retail Sales Forecast - Timeseries Analysis

- "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 an operations manager, we need to finalise the plan for the next 6 months by forecasting the sales and the demand for the period, so that revenue and inventory can be managed accordingly.

- We have considered TOP 5 segments for analysis based on Profit and Profitability Index are-

  # APAC Consumer : 222k ; 63

  # EU Consumer : 188k ; 62.4

  # APAC Corporate: 129k ; 69

  # EU Corporate : 123k ; 76

  # LATAM Consumer: 120k ; 66

- Findings: If we compare Manual decomposition based model with AUTOARIMA models, we could see that Manual Models have performed better compared to AUTOARIMA models
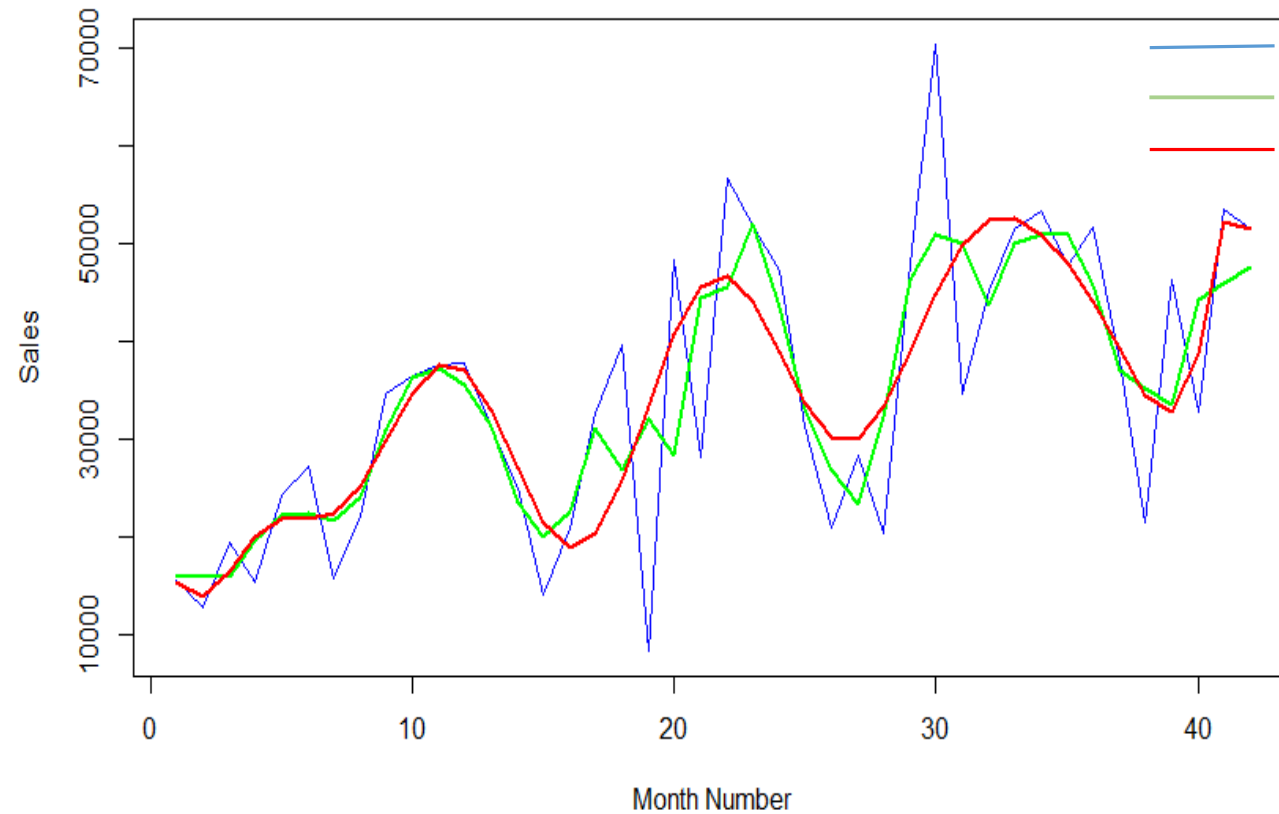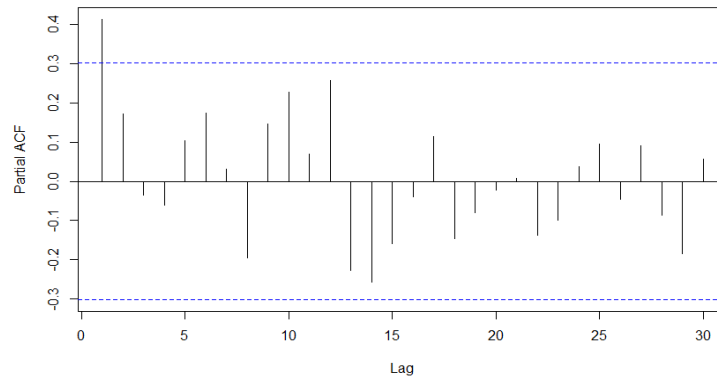
Methodology
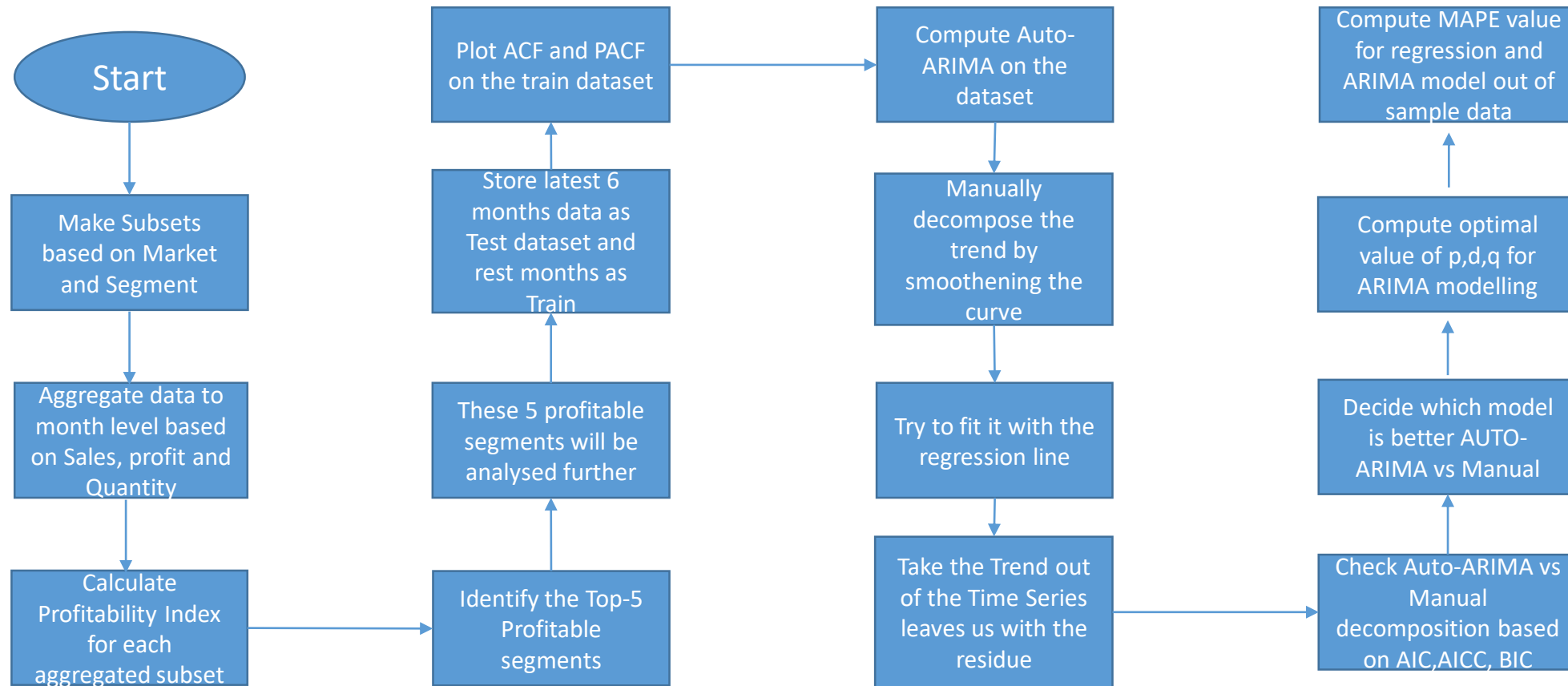
Sales - CONSUMER Segment - APAC marketplace
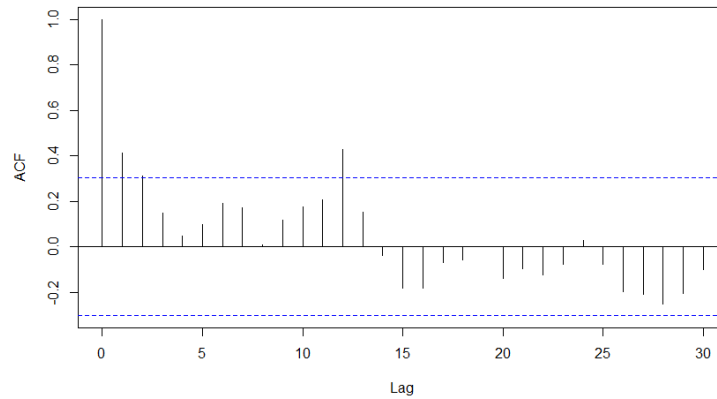
Sales - CONSUMER Segment - EU marketplace

ACF Plot for EU Consumer Sales
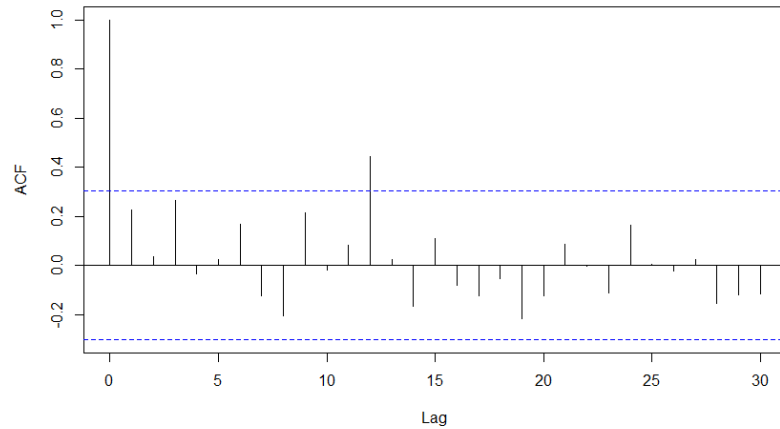
PACF Plot for EU Consumer Sales
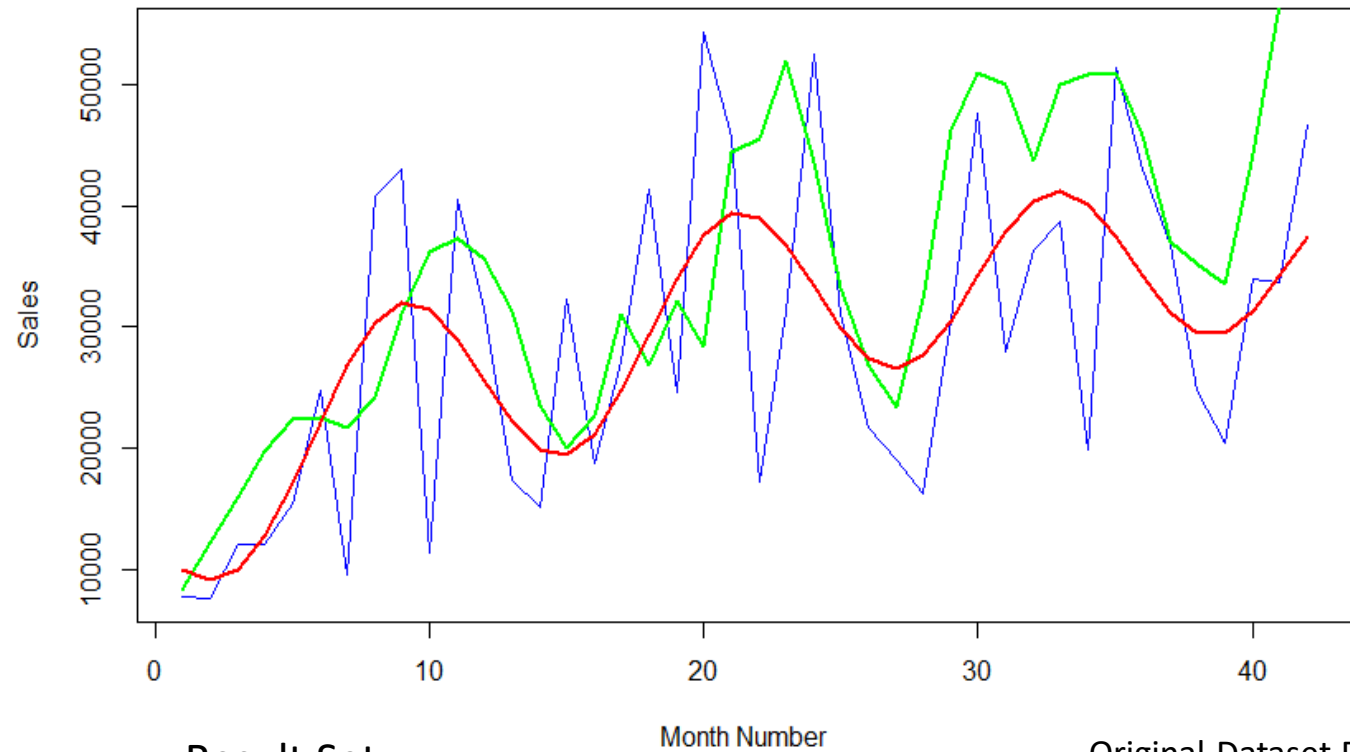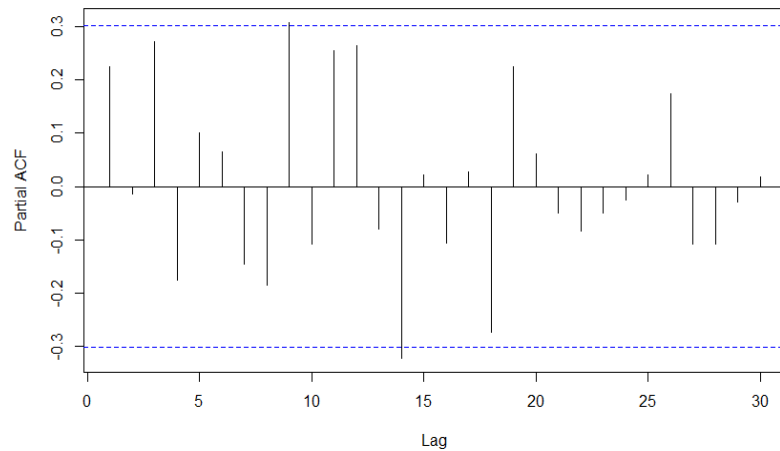
Result Set
MAPE for Regression :
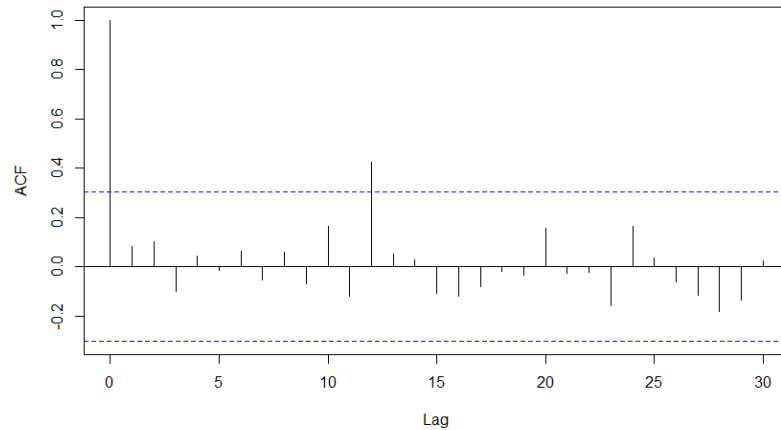22.71581
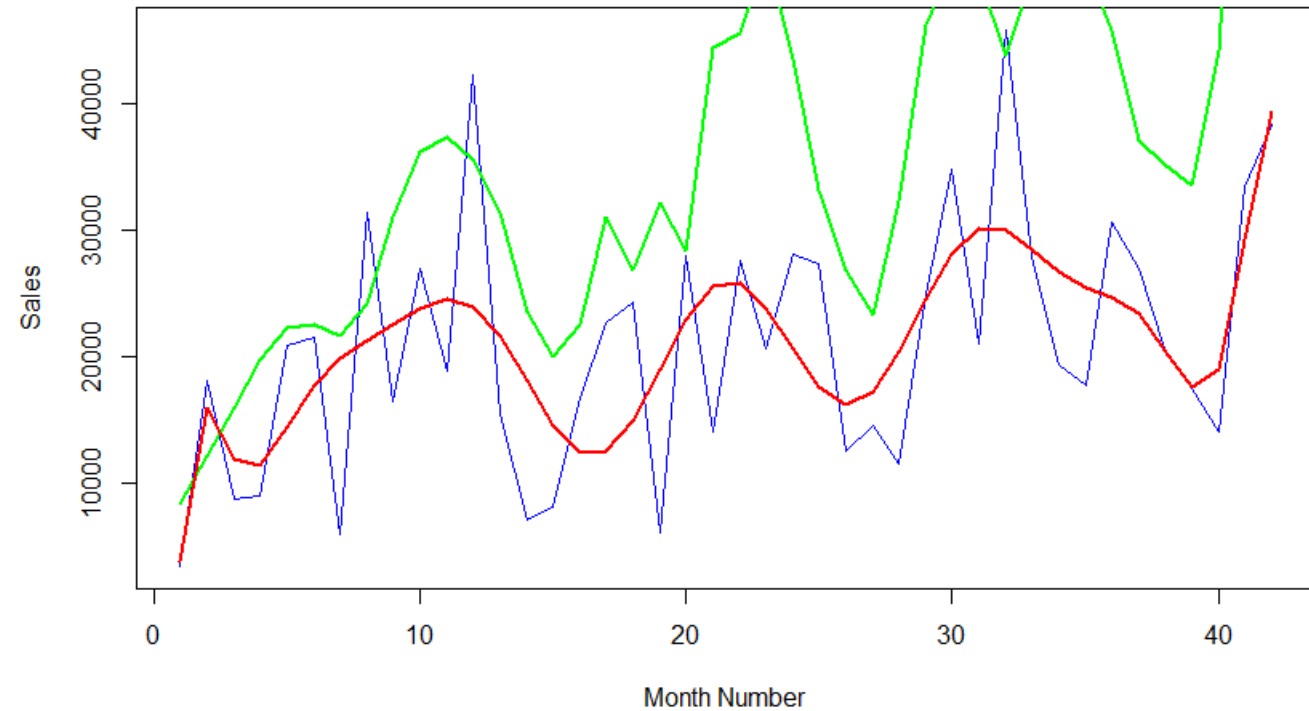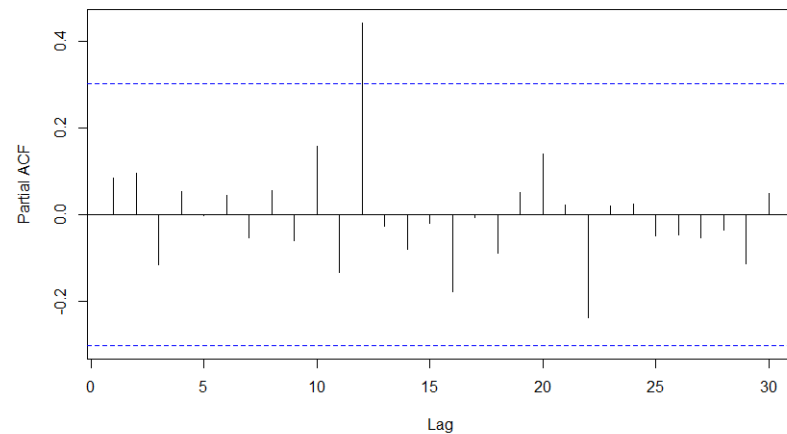MAPE for autoarima :
28.9226

Month Number

—— Original Dataset Plot
—— Smoothened plot
—— Linear Regression Fit

Sales - CORPORATE Segment - APAC marketplace

ACF Plot for APAC Corporate Sales

PACF Plot for APAC Corporate Sales
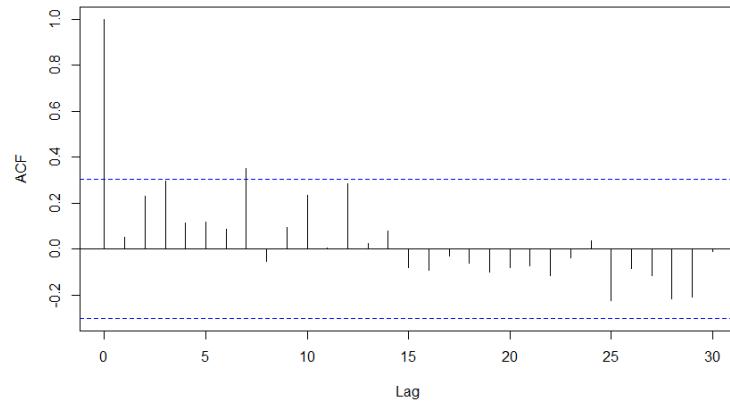
Result Set

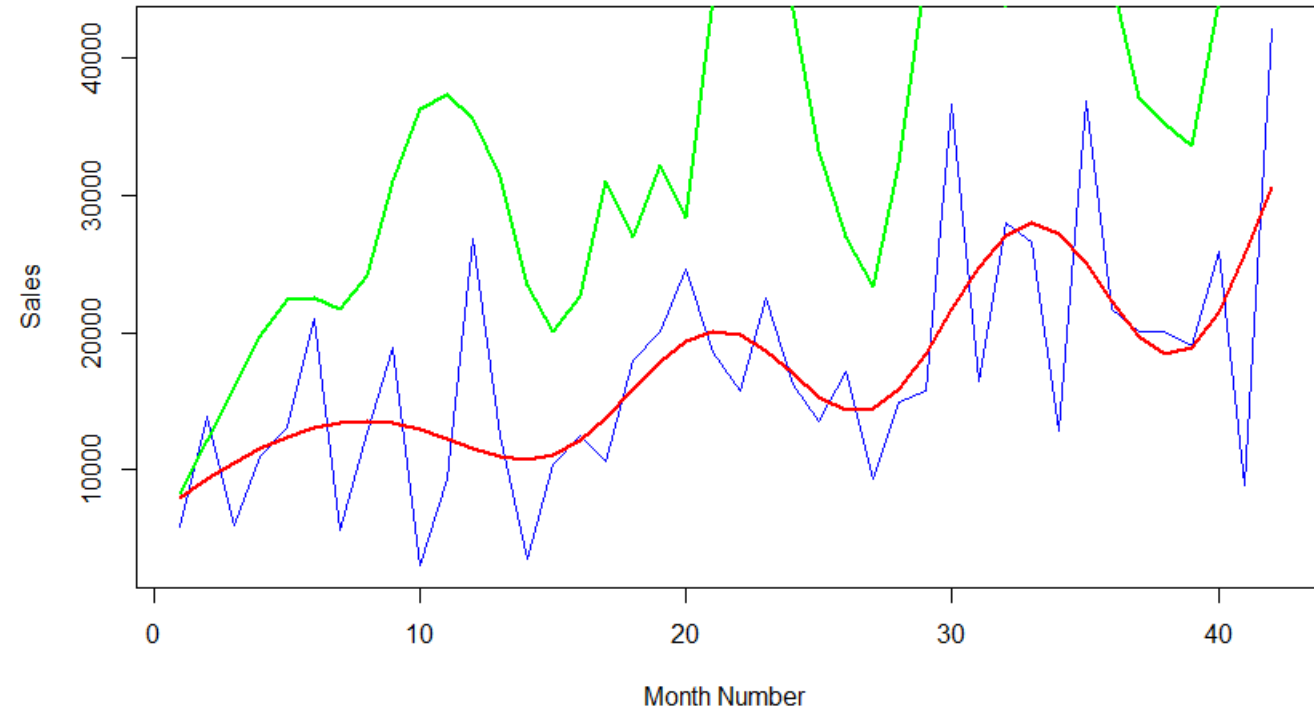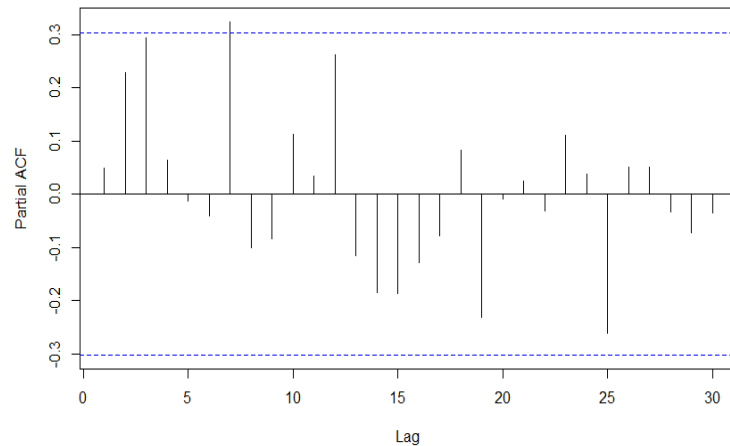MAPE for Regression :
26.55771
MAPE for autoarima :
27.97408

Original Dataset Plot
Smoothened plot
Linear Regression Fit

Sales - CORPORATE Segment - EU marketplace

ACF Plot for EU Corporate Sales

PACF Plot for EU Corporate Sales

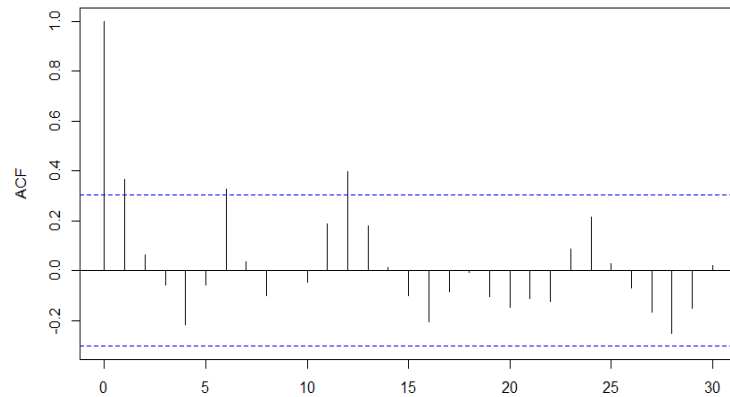**Result Set**

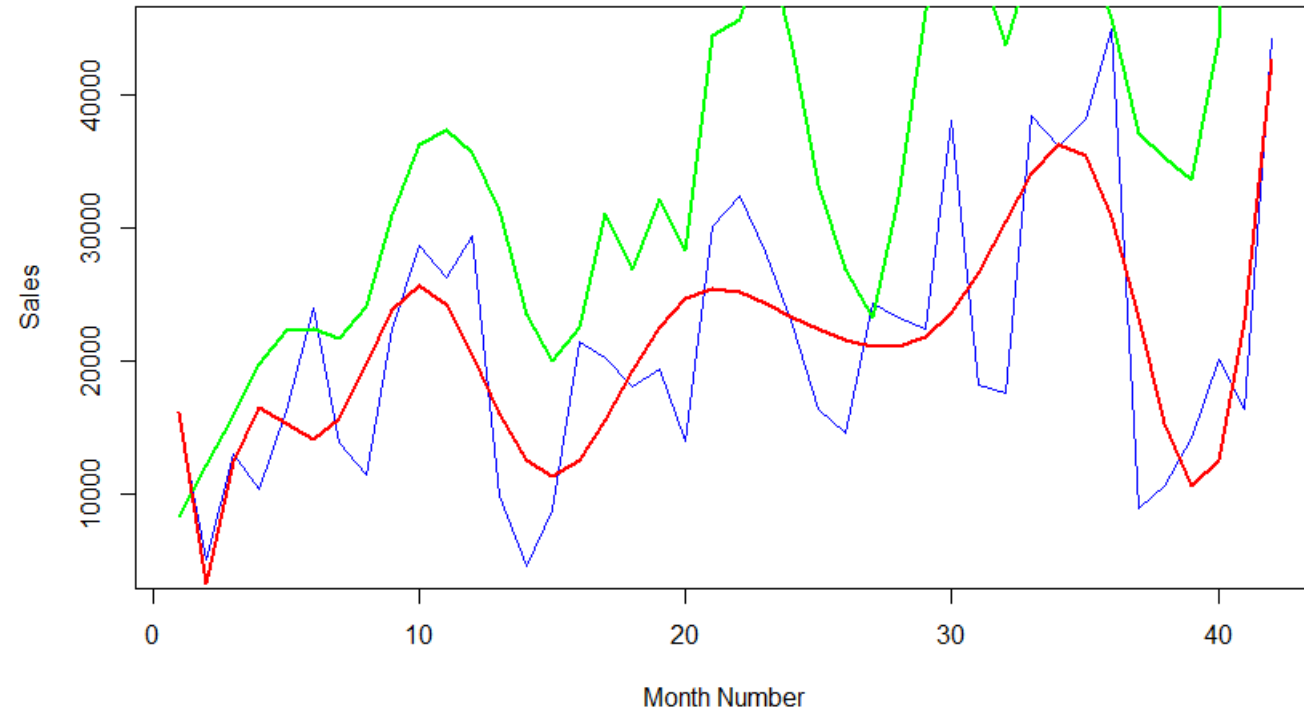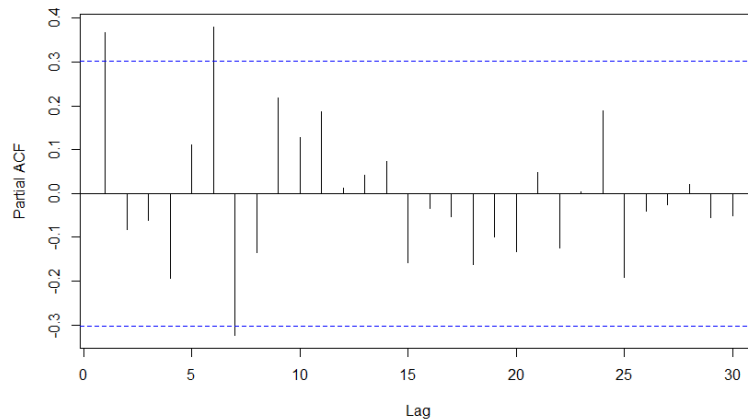MAPE for Regression :
79.79463
MAPE for autoarima :
36.35092

— Original Dataset Plot
— Smoothened plot
— Linear Regression Fit

Sales - CONSUMER Segment - LATAM marketplace

ACF Plot for LATAM Consumer Sales

PACF Plot for LATAM Consumer Sales
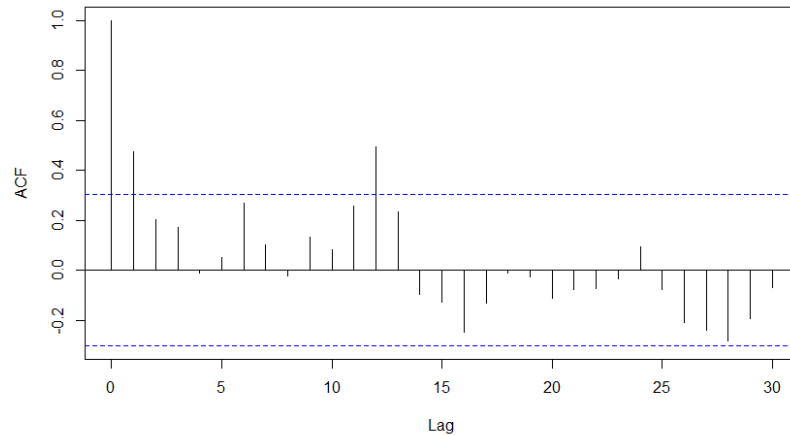
Result Set

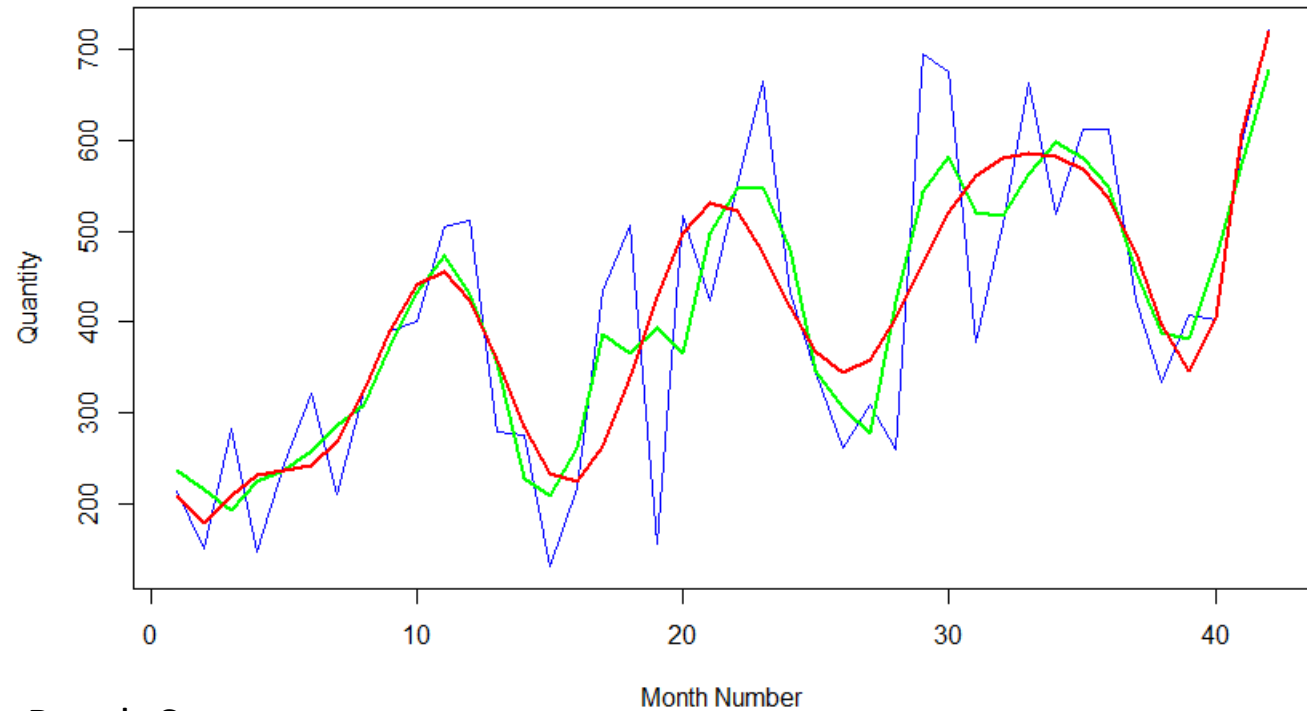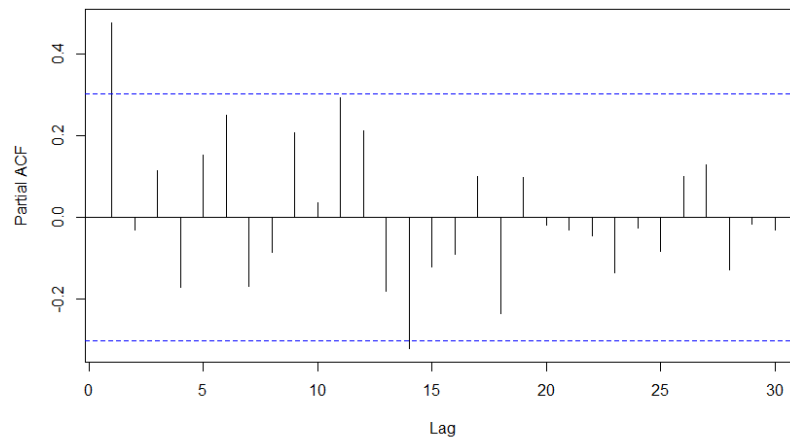MAPE for Regression :
31.66988

MAPE for autoarima :
33.96611

Original Dataset Plot
Smoothened plot
Linear Regression Fit

Quantity - CONSUMER Segment - APAC marketplace

ACF Plot for APAC Consumer Quantity

PACF Plot for APAC Consumer Quantity

Result Set
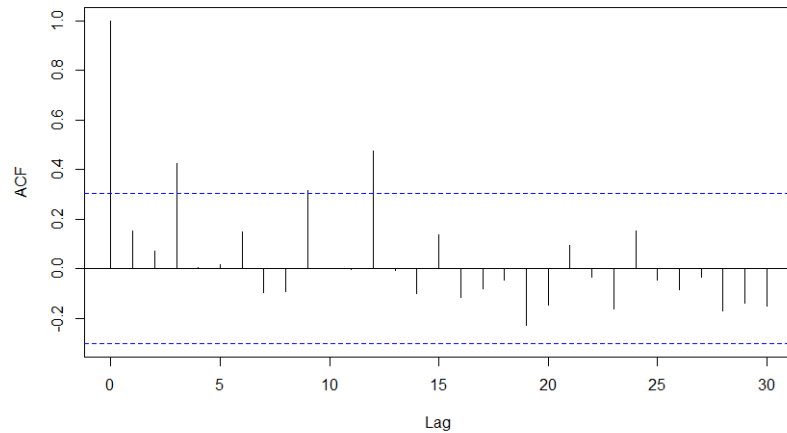
MAPE for Regression :
37.13402

MAPE for autoarima :
26.24458

— Original Dataset Plot
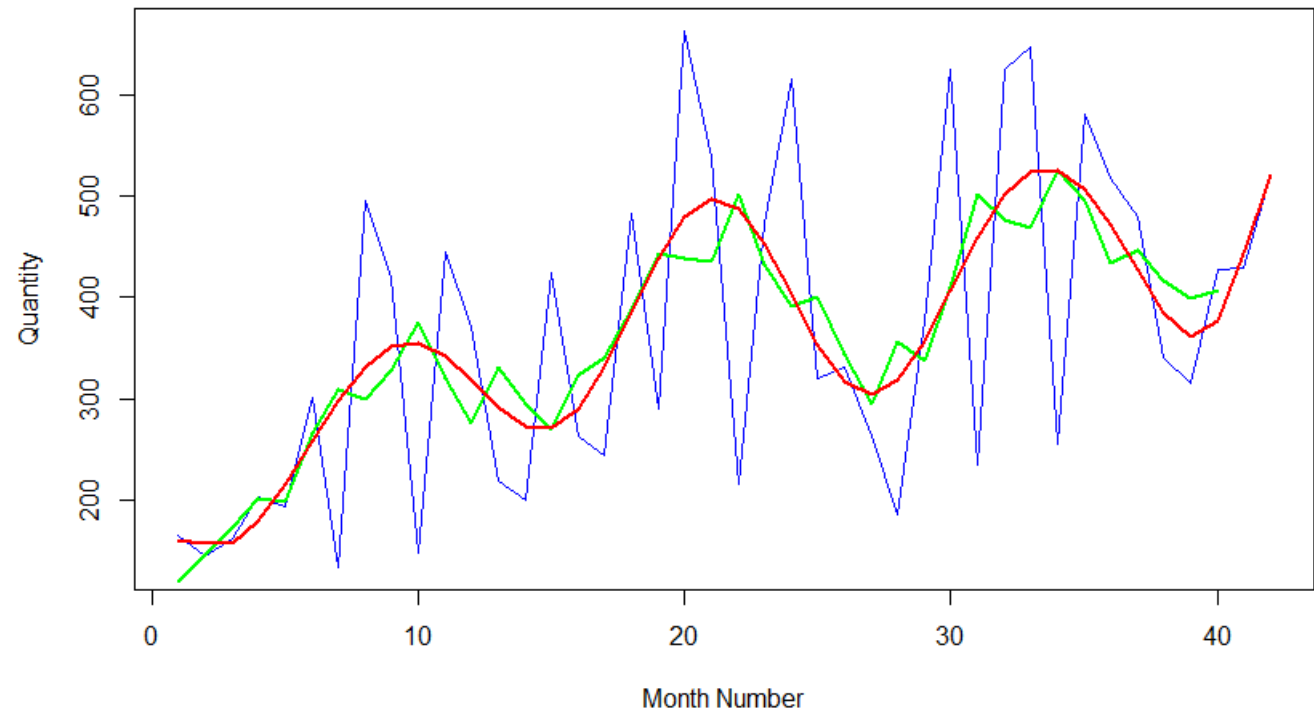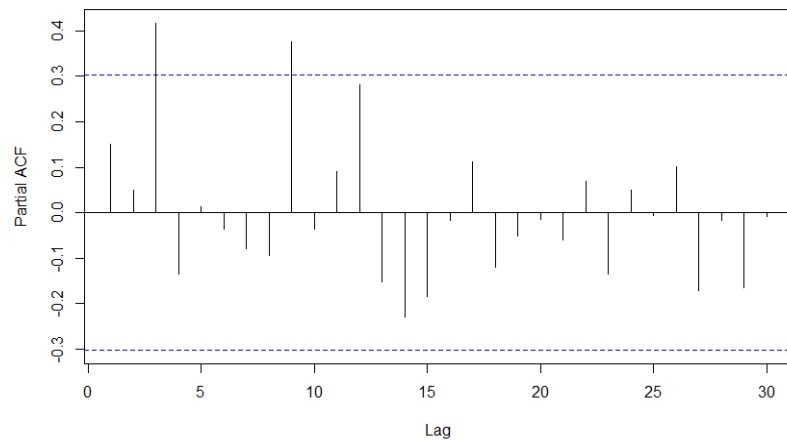— Smoothened plot
— Linear Regression Fit

Quantity - CONSUMER Segment - EU marketplace

ACF Plot for EU Consumer Quantity
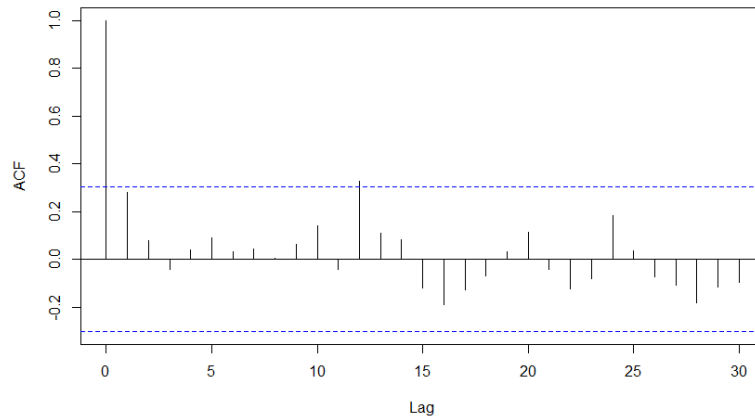
PACF Plot for EU Consumer Quantity

Result Set

MAPE for Regression :
29.37811

MAPE for autoarima :
30.13319

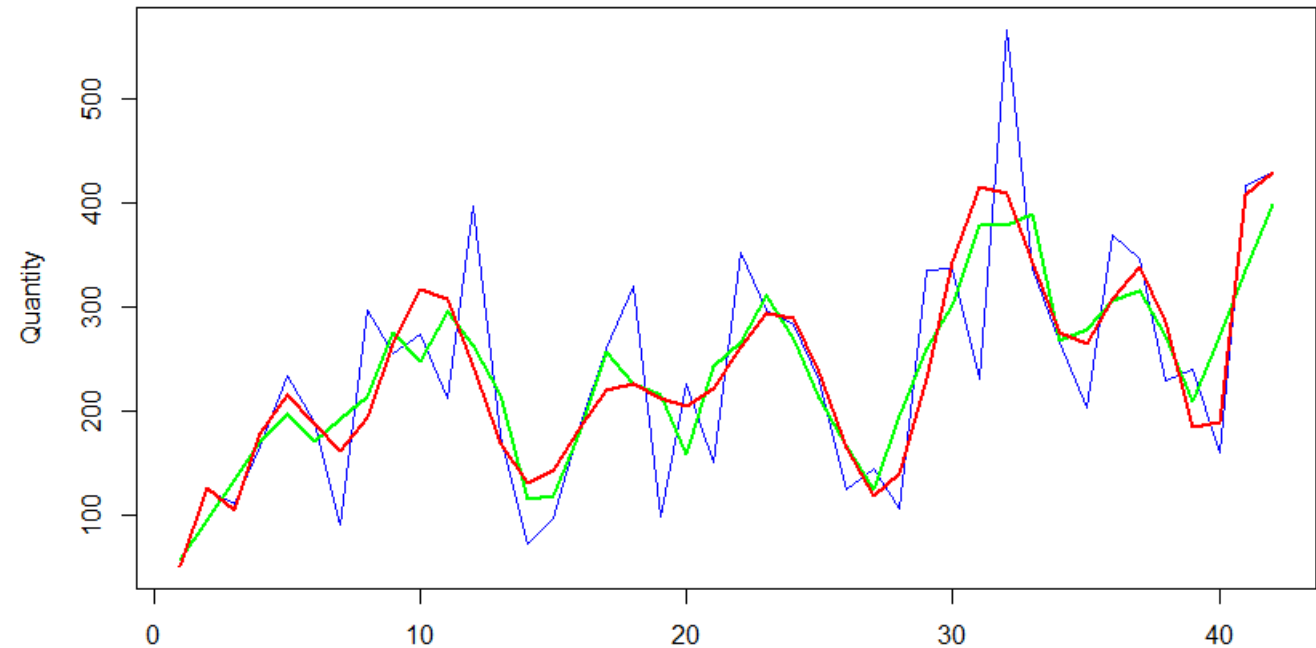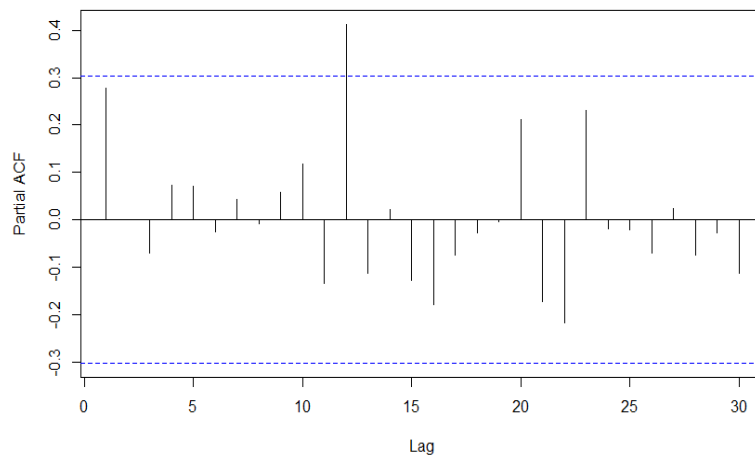— Original Dataset Plot
— Smoothened plot
— Linear Regression Fit

Quantity - CORPORATE Segment - APAC marketplace

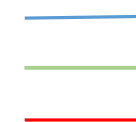ACF Plot for APAC Corporate Quantity

PACF Plot for APAC Corporate Quantity

Result Set

MAPE for Regression :
27.67883

MAPE for autoarima :
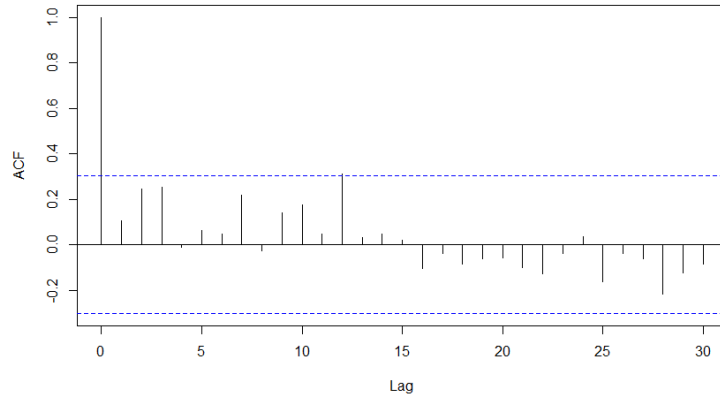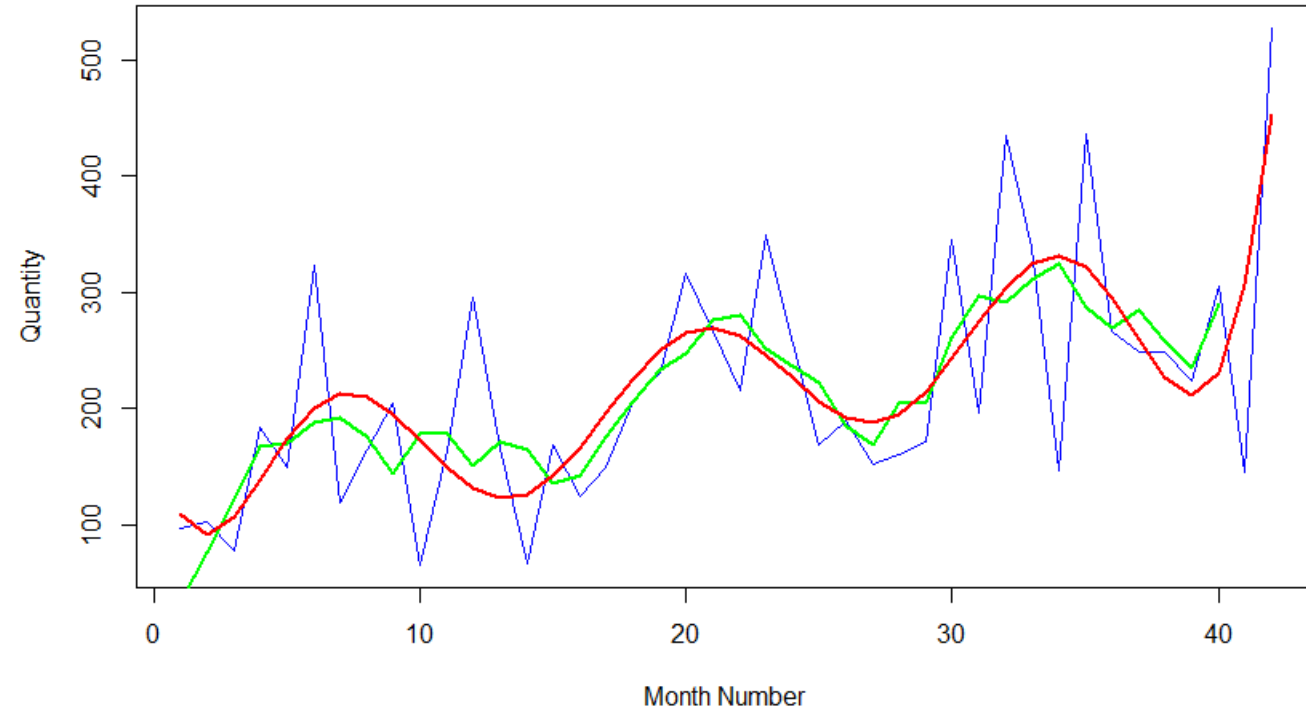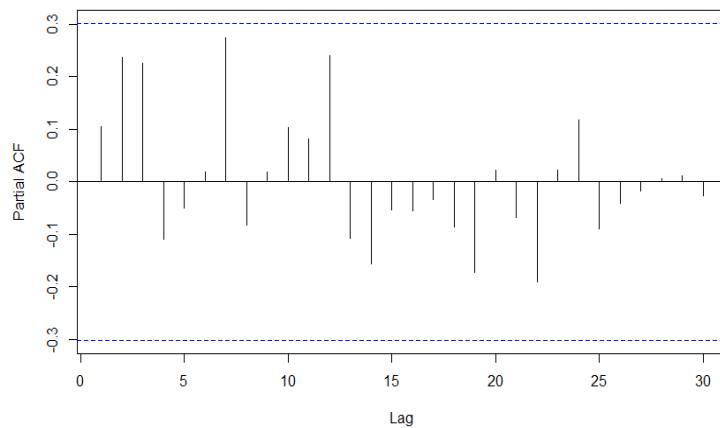24.13219

Original Dataset Plot
Smoothened plot
Linear Regression Fit

Quantity - CORPORATE Segment - EU marketplace

ACF Plot for EU Corporate Quantity

PACF Plot for EU Corporate Quantity
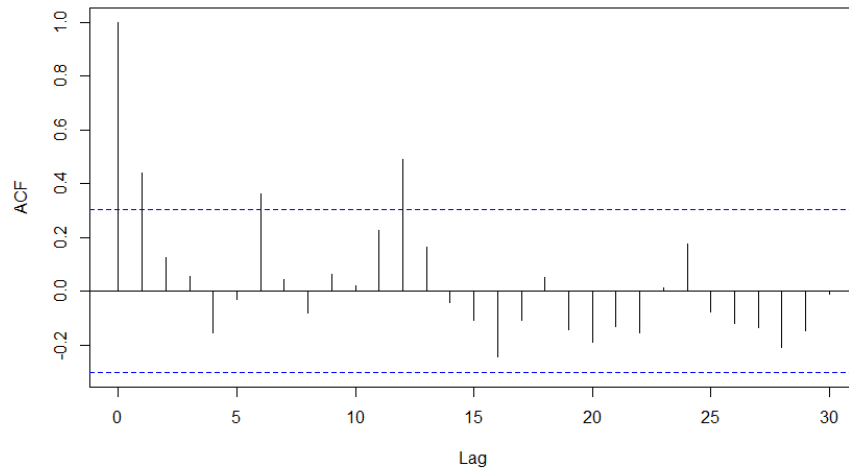
Result Set

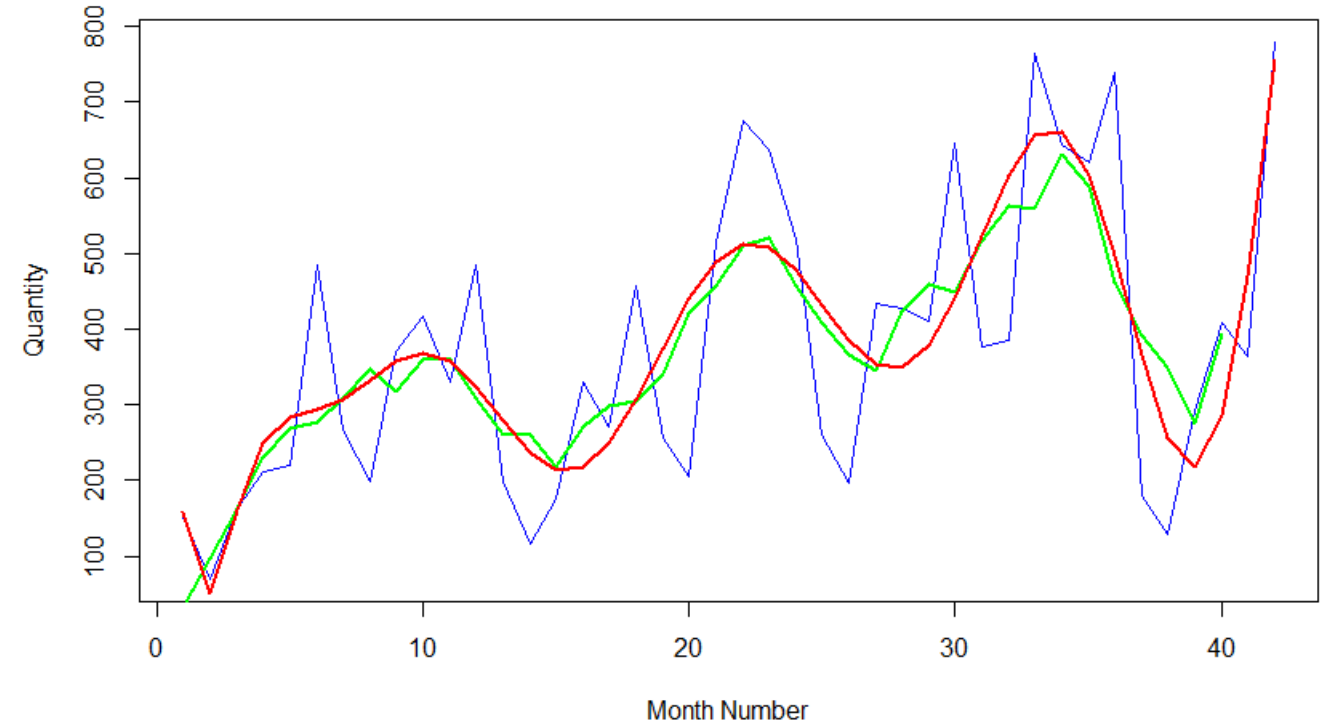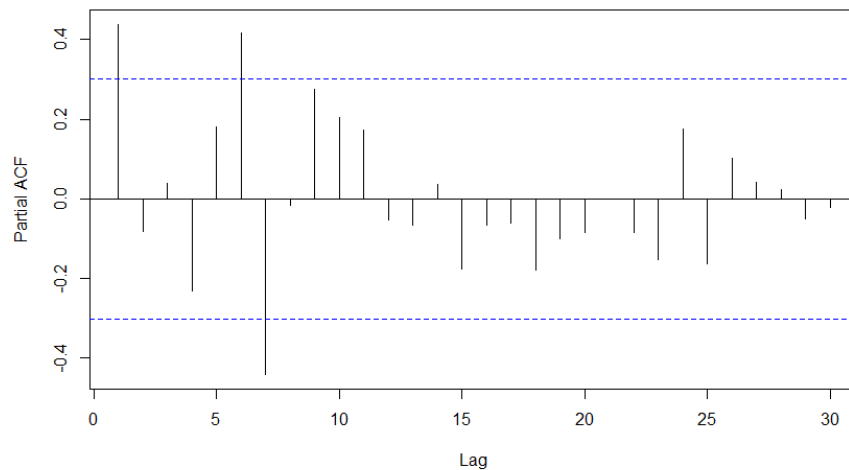MAPE for Regression :
197.4539
MAPE for autoarima :
47.54968

	Original Dataset Plot
	Smoothened plot
	Linear Regression Fit

Quantity - Consumer Segment - LATAM marketplace

ACF Plot for LATAM Consumer Quantity

PACF Plot for LATAM Consumer Quantity

Result Set

MAPE for Regression :
123.57532
MAPE for autoarima :
47.69576

(blue line)	Original Dataset Plot
(green line)	Smoothened plot
(red line)	Linear Regression Fit