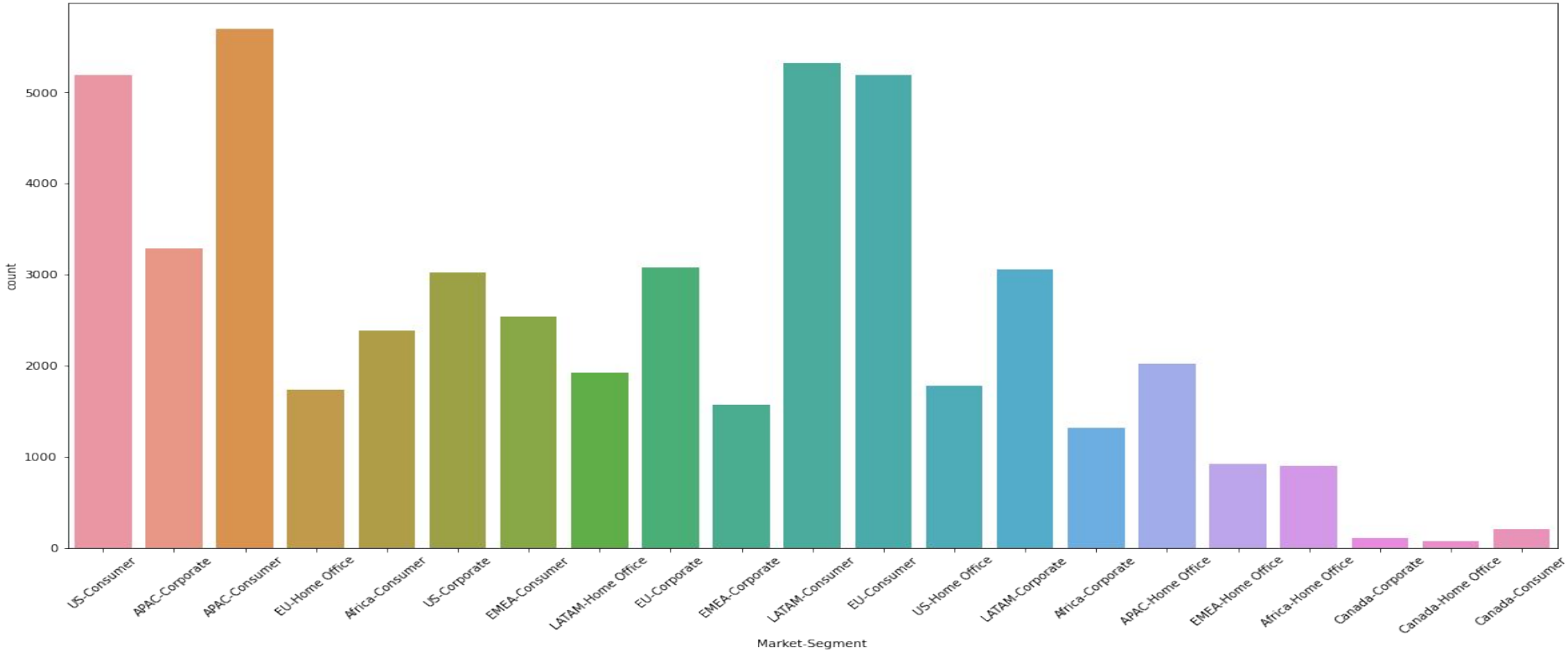
RETAIL GIANT SALES FORECASTING ASSIGNMENT

Made by-Hrishabh M

21 Market Segments



Covariance Of 21 Market Segments

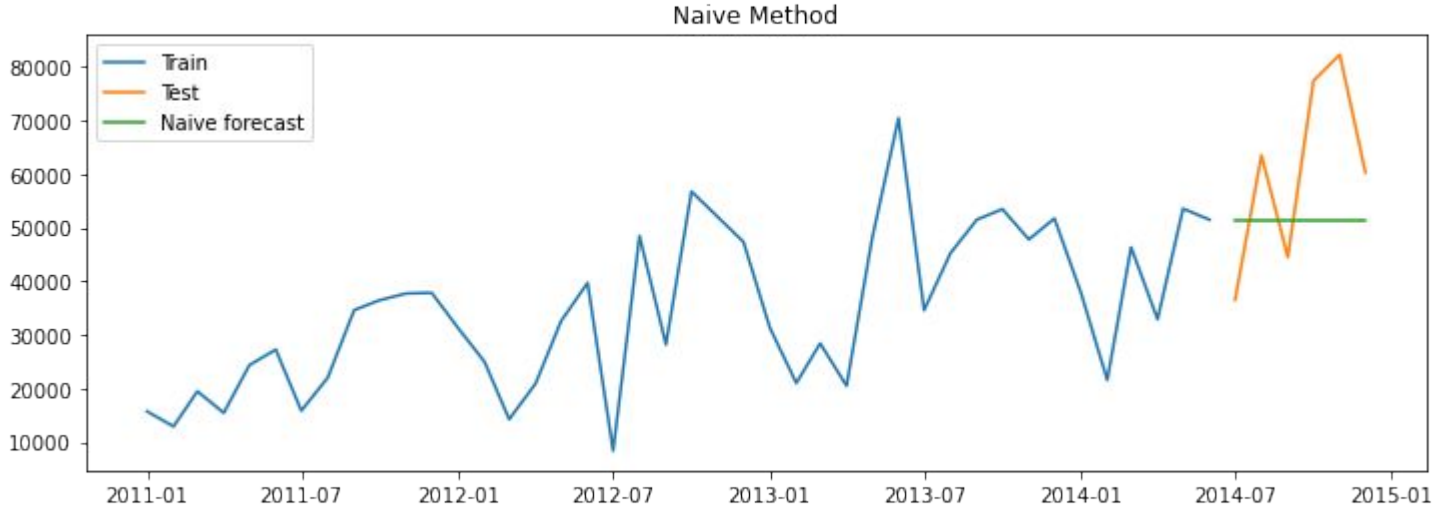
Index	Market-Segment	Covariance
0	APAC-Consumer	0.596404
1	APAC-Corporate	0.731926
2	APAC-Home Office	1.048817
3	Africa-Consumer	1.429335
4	Africa-Corporate	1.664827
5	Africa-Home Office	1.989866
6	Canada-Consumer	1.476093
7	Canada-Corporate	1.19722
8	Canada-Home Office	2.1883
9	EMEA-Consumer	2.716992
10	EMEA-Corporate	6.779639
11	EMEA-Home Office	6.066684
12	EU-Consumer	0.647485
13	EU-Corporate	0.689346
14	EU-Home Office	1.114681
15	LATAM-Consumer	0.680684
16	LATAM-Corporate	0.88026
17	LATAM-Home Office	1.343696
18	US-Consumer	1.095295
19	US-Corporate	1.027209
20	US-Home Office	1.217133

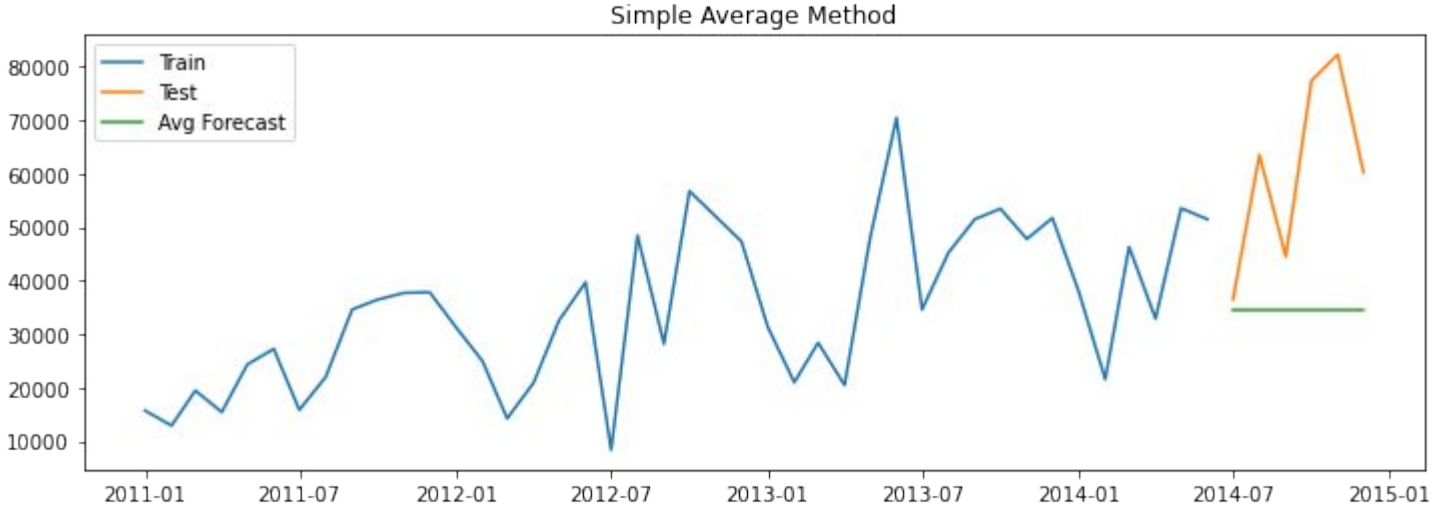
APAC Consumer to be Most Profitable

Since the covariance of APAC Consumer is very less as compared to other Market Segment.

Index	Market-Segment	Covariance
0	APAC-Consumer	0.596404

Sales Forecast Plots Of Smoothing Techniques




Simple Average Method
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Avg Forecast
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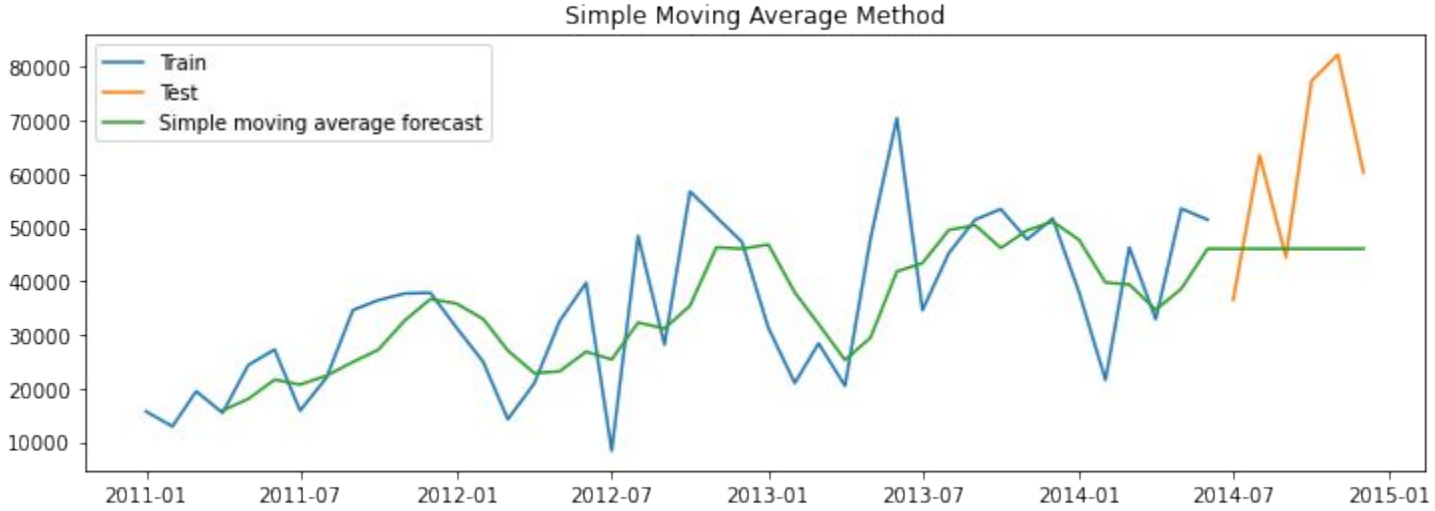
Simple Moving Average Method
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Simple moving average forecast
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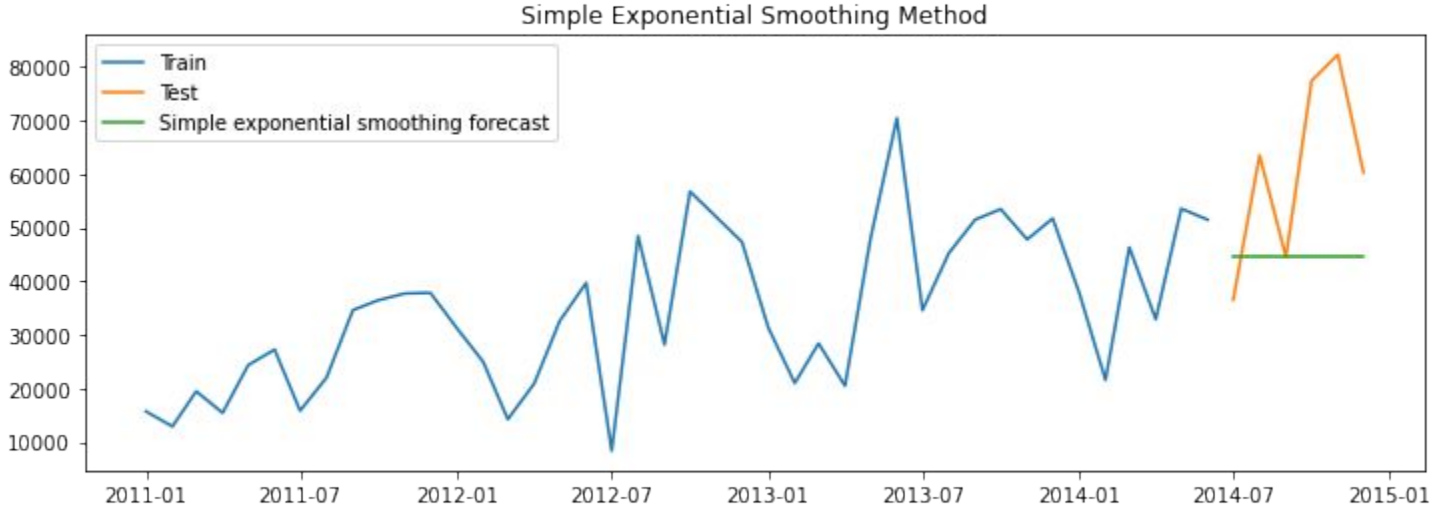
Simple Exponential Smoothing Method
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Simple exponential smoothing forecast
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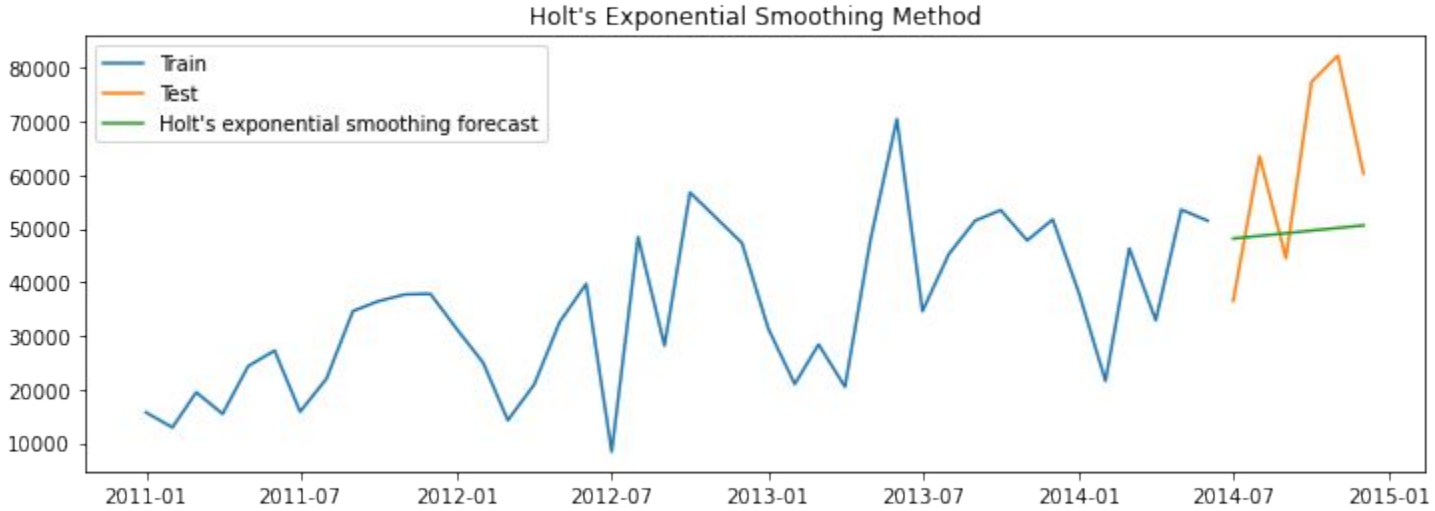
Holt's Exponential Smoothing Method
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Holt's exponential smoothing forecast
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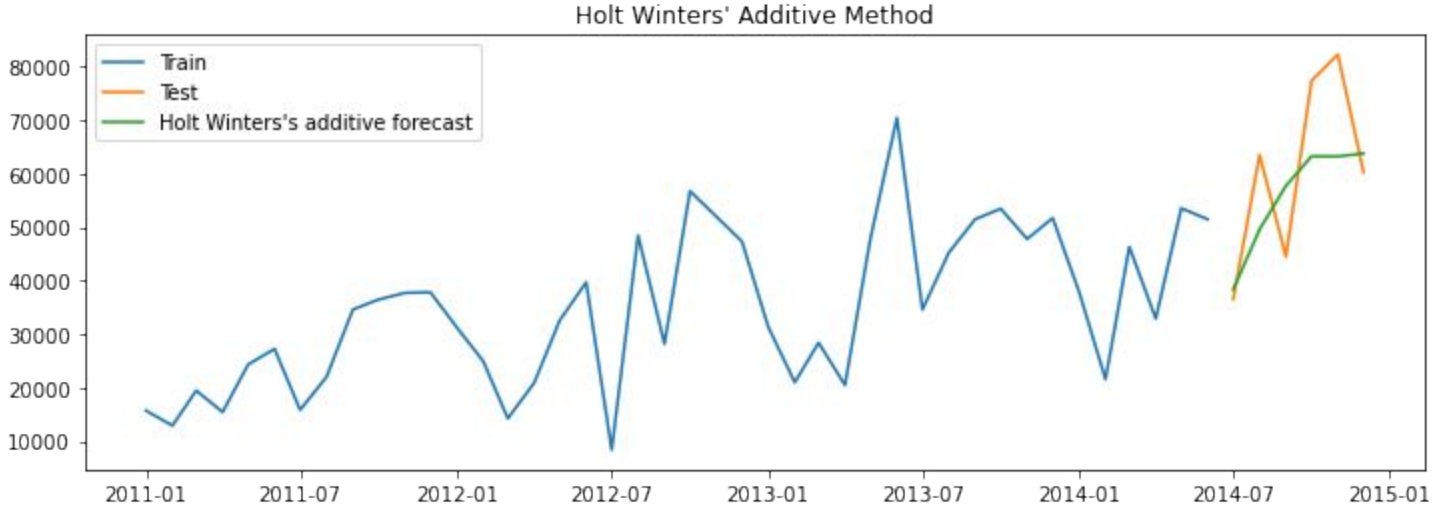
Holt Winters' Additive Method
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Holt Winters's additive forecast
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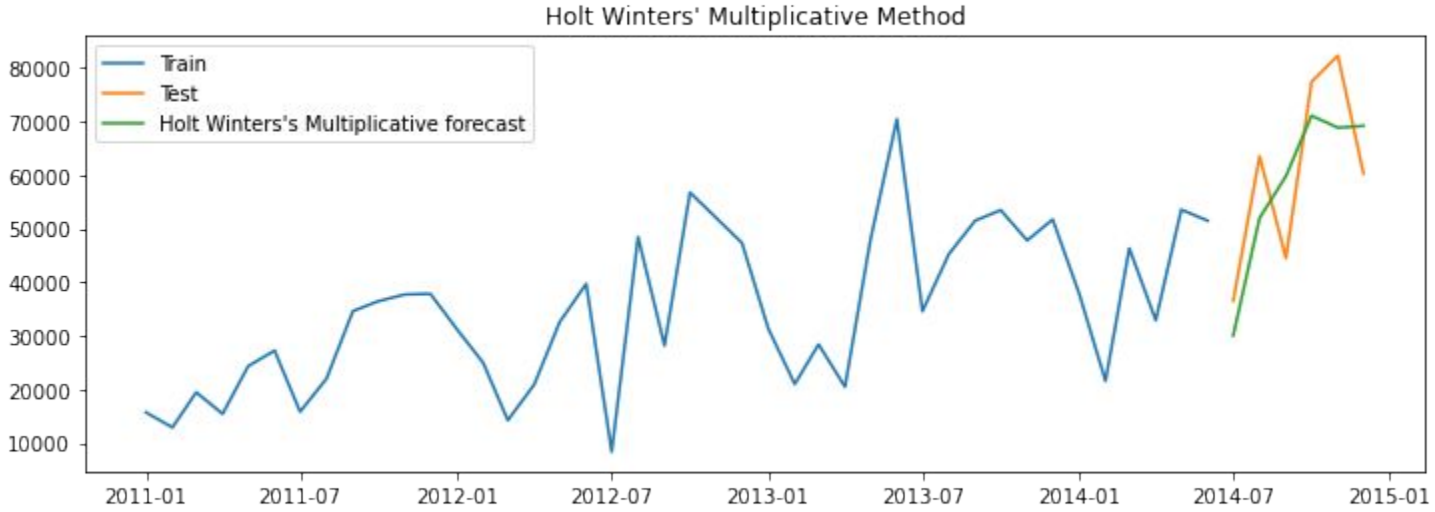
Holt Winters' Multiplicative Method
Train
Test
Holt Winters's Multiplicative forecast
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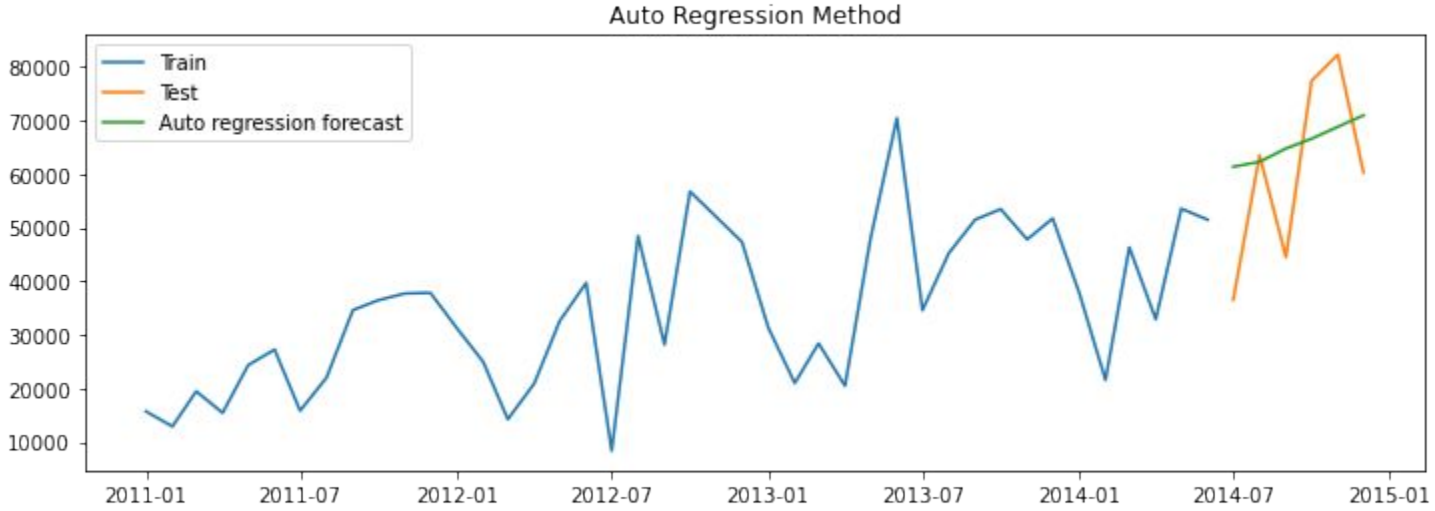
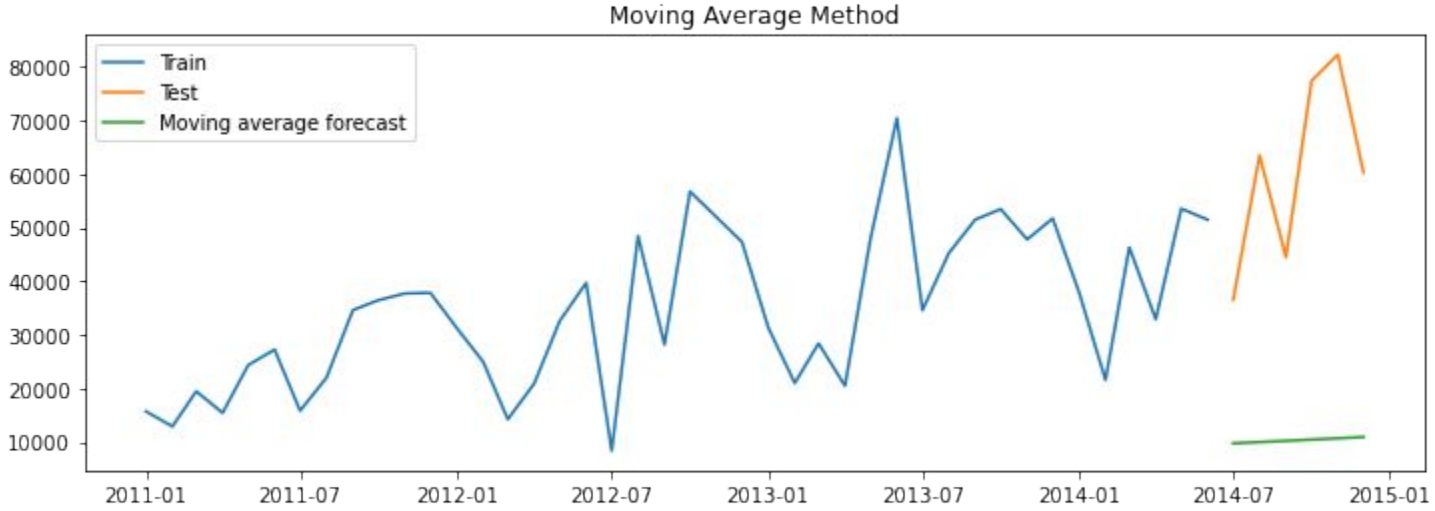
2014-07
2015-01

RMSE and MAPE values Of Smoothing Techniques

	Method	RMSE	MAPE
0	Naive method	18774.05	26.86
0	Simple Average Method	30846.00	38.18
0	Simple moving average forecast	21958.41	27.54
0	Simple exponential smoothing forecast	22824.62	27.70
0	Holt's exponential smoothing method	19473.57	26.12
0	Holt Winters' additive method	12565.60	17.32
0	Holt Winters' multiplicative method	10876.35	18.27

Sales Forecast Plots Of ARIMA Techniques




Moving Average Method
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Moving average forecast
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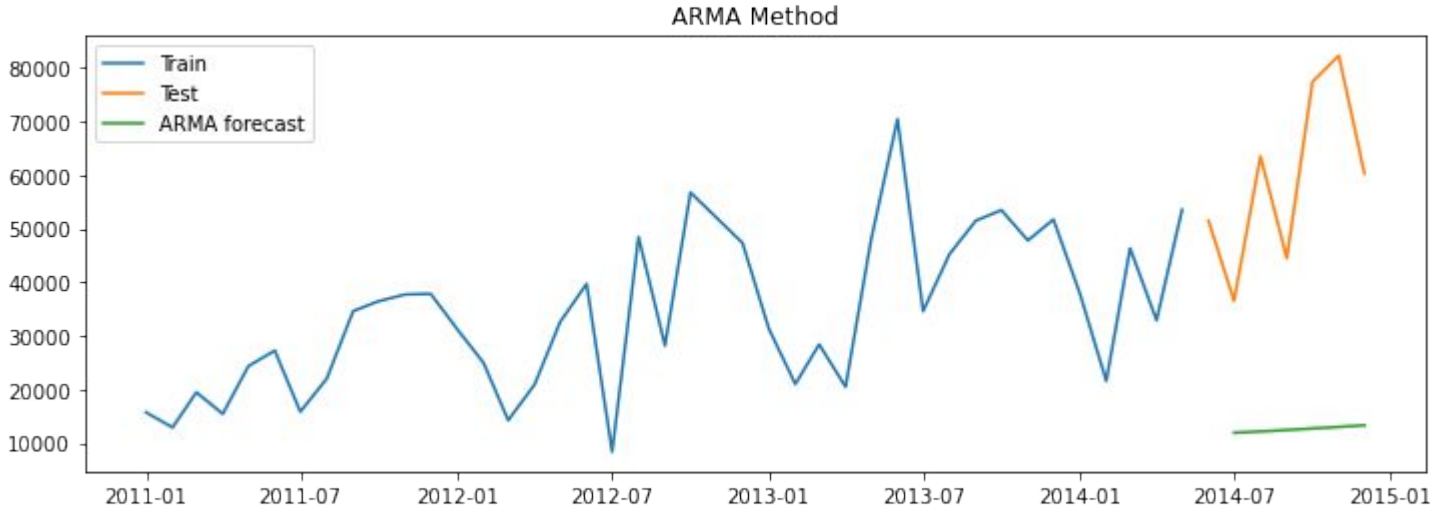
ARMA Method
Train
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ARMA forecast
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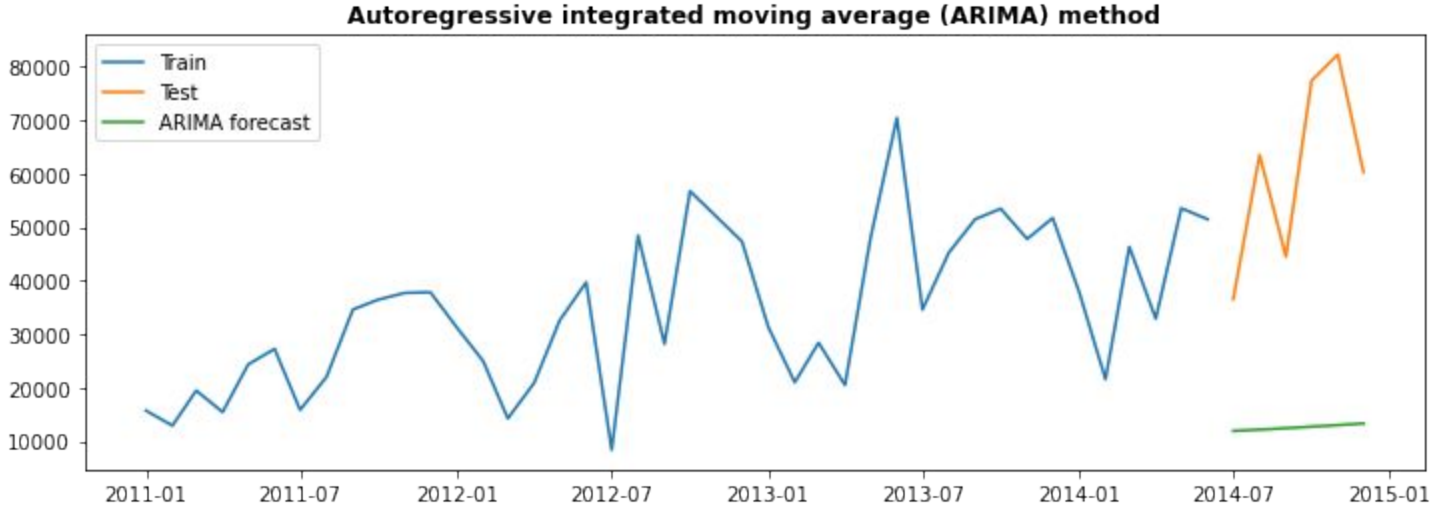
Autoregressive integrated moving average (ARIMA) method
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Test
ARIMA forecast
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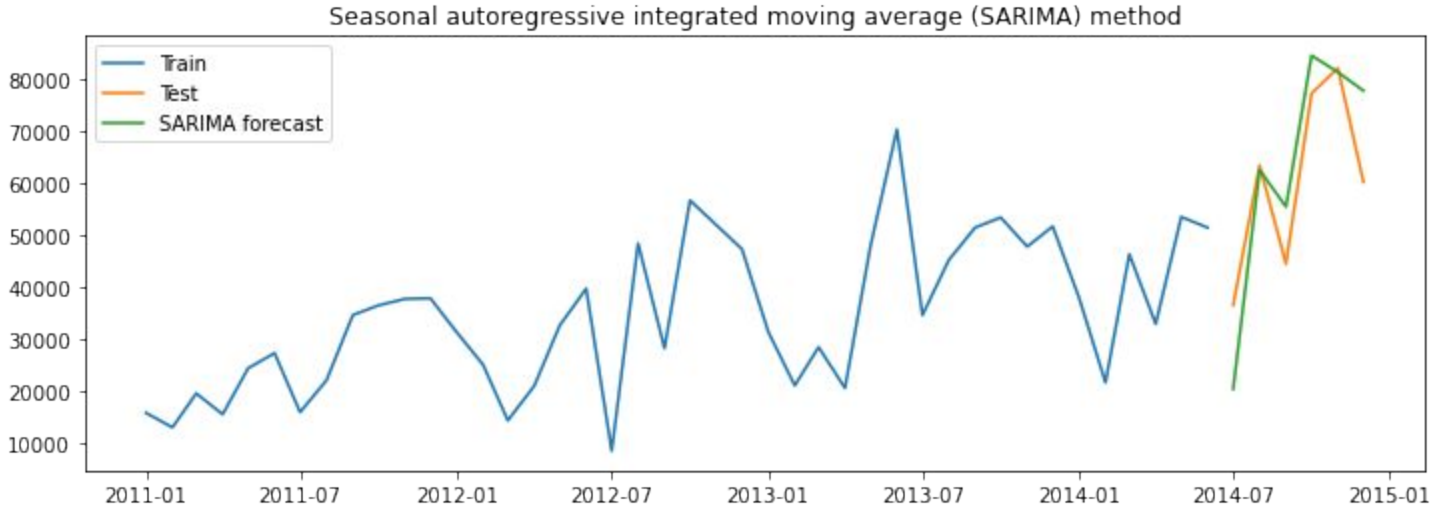
Seasonal autoregressive integrated moving average (SARIMA) method
Train
Test
SARIMA forecast
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2014-01
2014-07
2015-01

RMSE and MAPE value of ARIMA Techniques

		RMSE	MAPE
0	Autoregressive (AR) method	15505.02	27.27
0	Moving Average (MA) method	52903.35	81.64
0	Autoregressive moving average (ARMA) method	50757.76	77.66
0	Autoregressive integrated moving average (ARIM...	50757.76	77.66
0	(SARIMA) Seasonal autoregressive integrated mo...	11179.96	18.38

Conclusion

1.Holt Winters additive method is the best forecasting method in the smoothing technique.

2.SARIMA - Seasonal Autoregressive Integrated moving average is the best method in ARIMA set of techniques.