Resource Optimization in E-Commerce

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AGENDA

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- Research Case
- Data Understanding & Preparation
- Modelling
- Interpretation
- Conclusion

RESEARCH CASE

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Resource Optimization is the process to match the available resources with the needs of the organization in order to achieve long term goals.

Optimization consists in achieving desired results within a set time frame and budget with minimum usage of the resource themselves.

The need to optimize resources is evident when the organization's demands tend to saturate and / or exceed the resources currently available.

Benefits of Resource Optimization

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1 Increased revenue

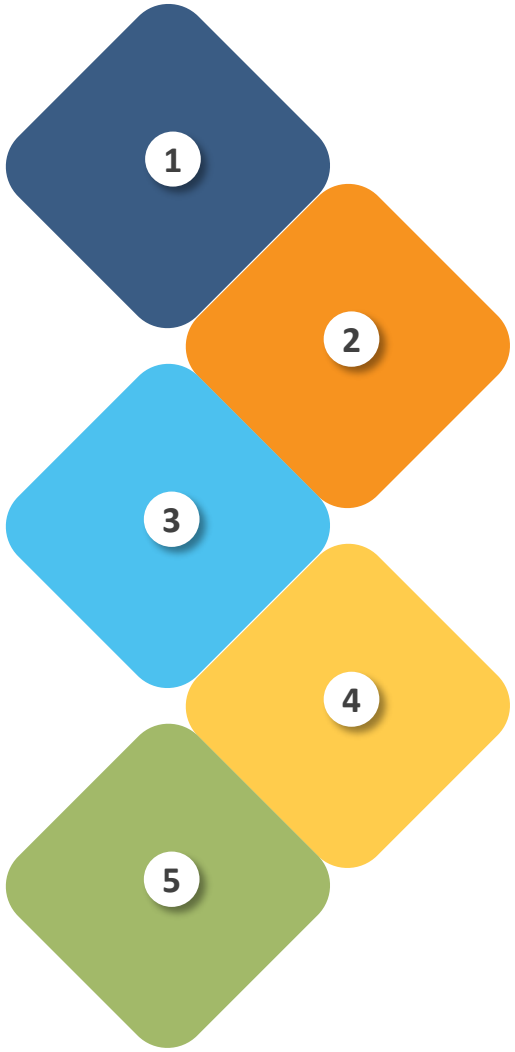
Resource Management helps to easily assess how well utilized the entire resource pool is on a daily, weekly or monthly basis, helping to ensure the most valuable resources are used to maximum effect.

3 Improve project delivery

Resource Management enable resources to be allocated to work based on a number of specific criteria such as their availability, skills and location and helps to have the right person allocated to the right job.

5 Reduce administration costs

Resource Optimization Systems helps to alleviete errors and the reduce the process time taken by the spreadsheet based systems.



Conflict resolution 2

Resource conflicts can have a significant effect on revenue, at worst an unresolved resource conflict may result in an immediate missed revenue opportunity, along with a negative future impact through reduced customer satisfaction.

Identify skills shortages 4

Resource Optimization helps to identify skills shortages and training requirements, helping to alleviate any future resourcing conflicts and there negative effects.

OBJECTIVE OF THE STUDY

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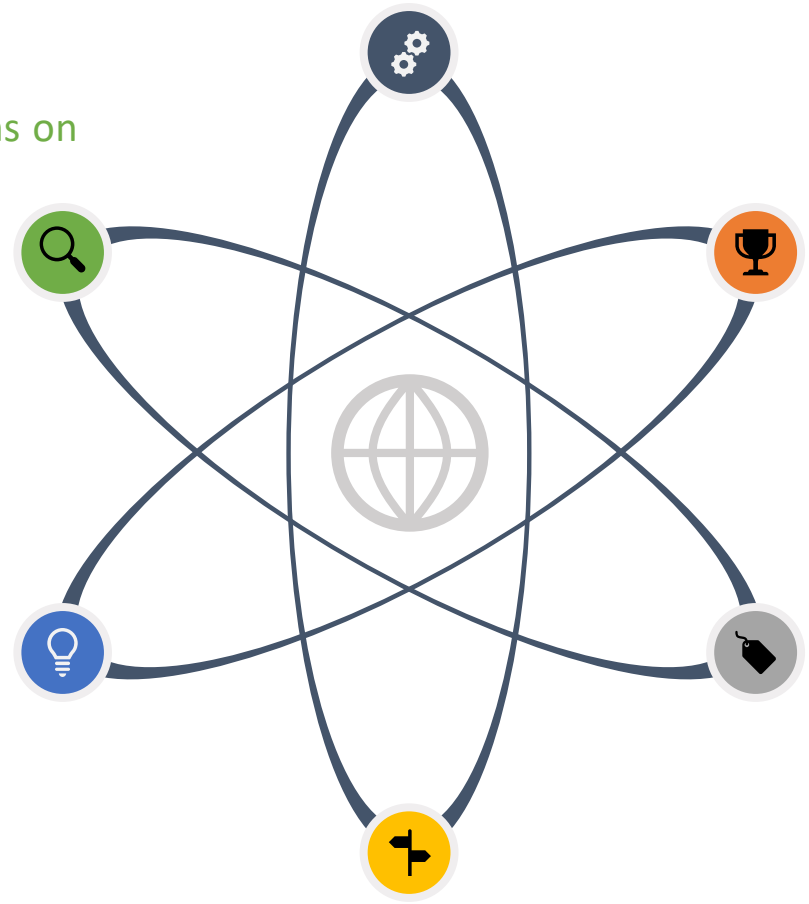
Predict the nature of call patterns on a Weekly/Daily/hourly

Recommendations of concurrent logins

Help the business to ensure that they are neither overstaffed nor under-staffed



Forecast with more than 90% accuracy.

Ensuring that the cost is under control and at the same time

Customer experience is not compromised.

DATA UNDERSTANDING AND PREPARATION

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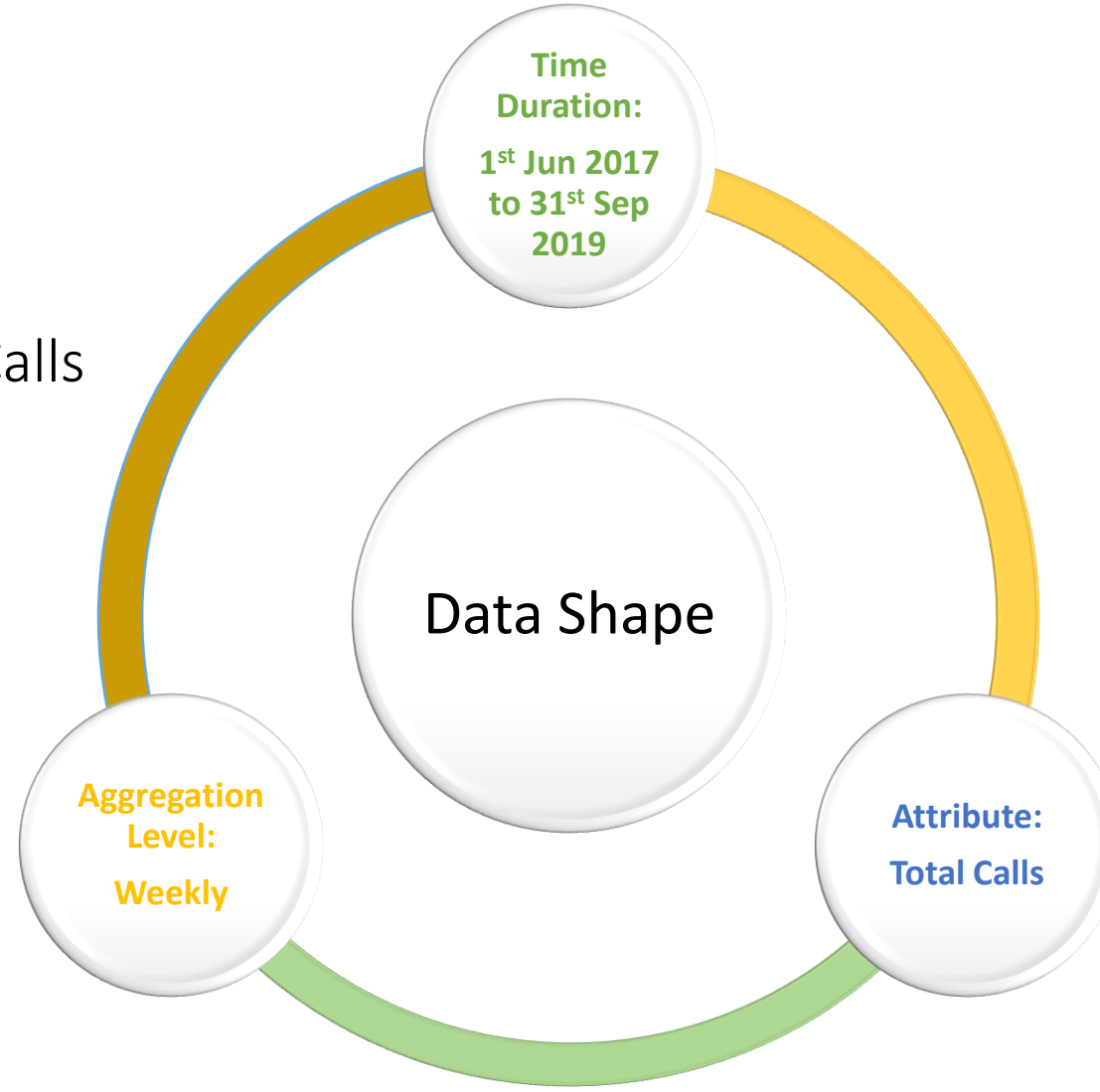
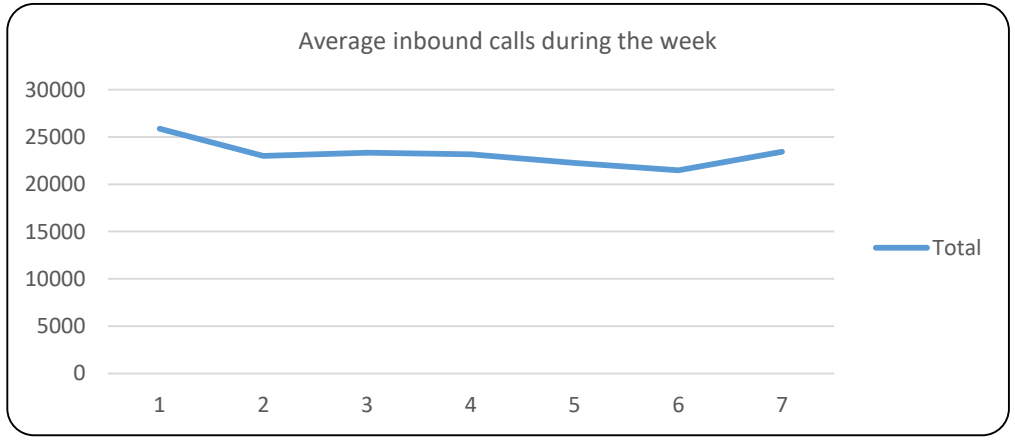
- Data collected from leading E-Commerce retail company.

- Total Inbound Calls = Operations Calls + Customer Calls



Weekly Calls Trend



MODELLING RESULTS

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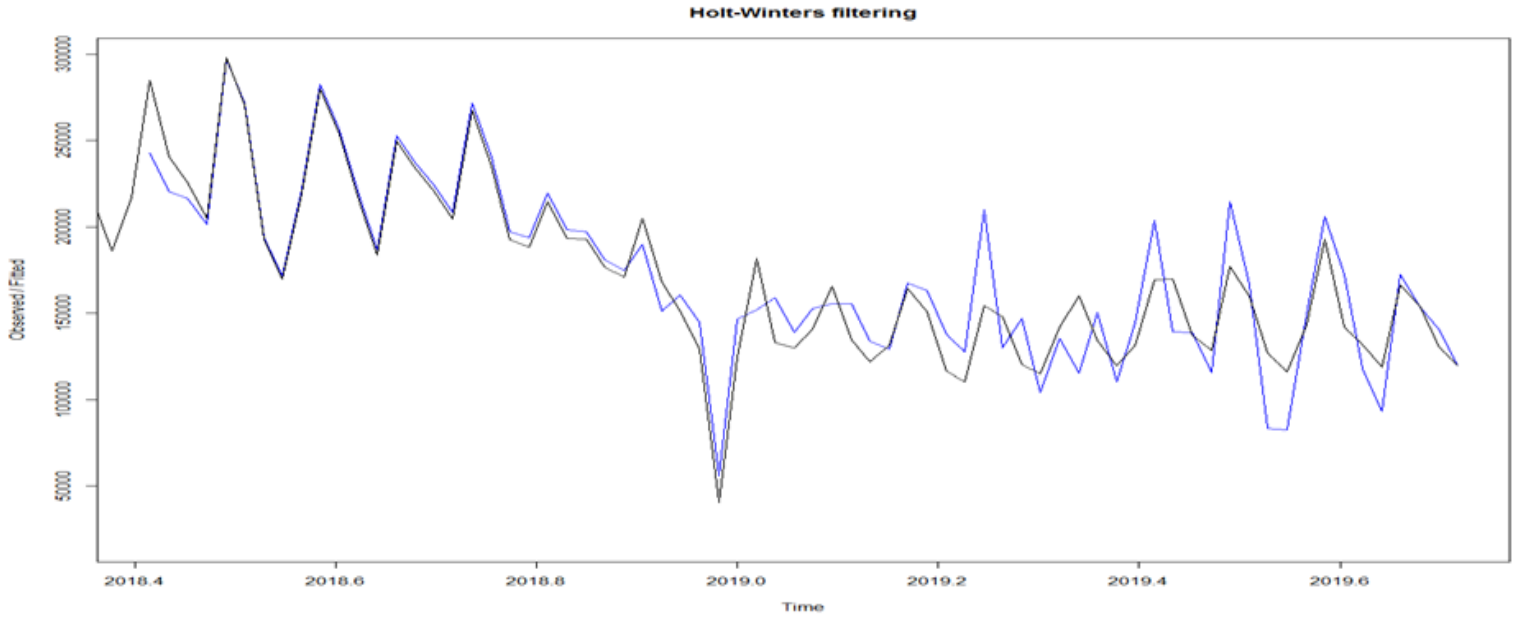
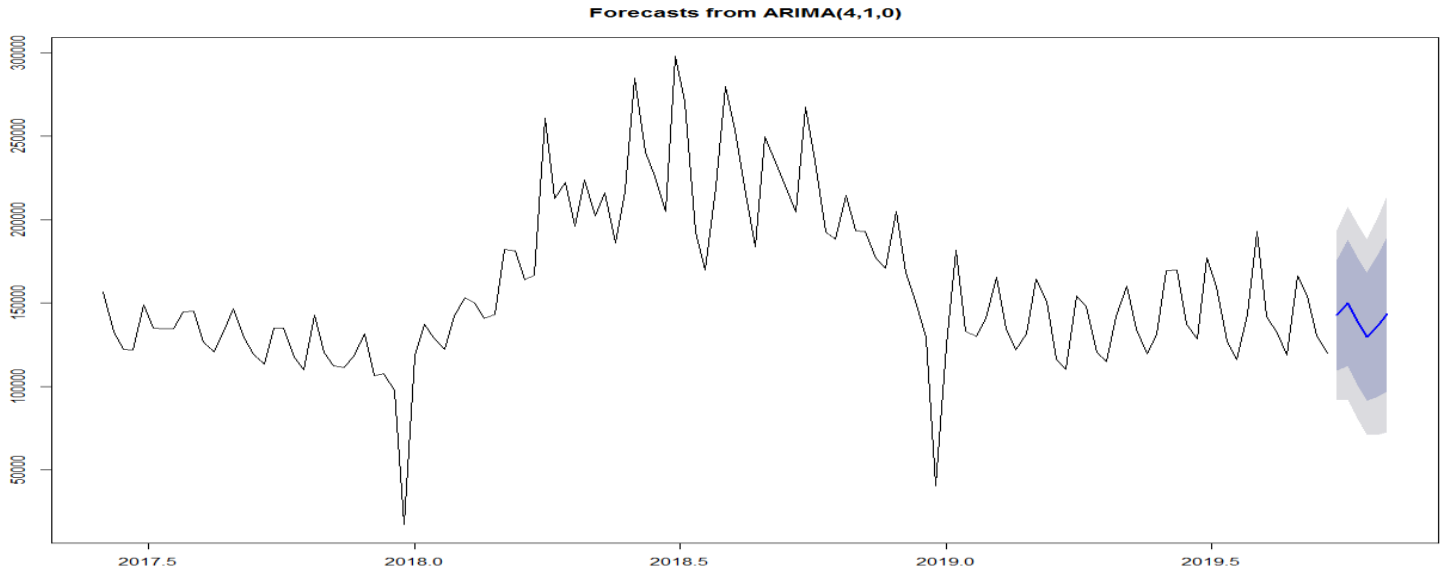
Holt Winters Forecasting results



Future Week	Calls Forecast
Week – 37	183443.0
Week – 38	152630.2
Week – 39	110683.5
Week – 40	108101.0
Week – 41	135355.7
Week – 42	115076.1

MAPE
12.61 %

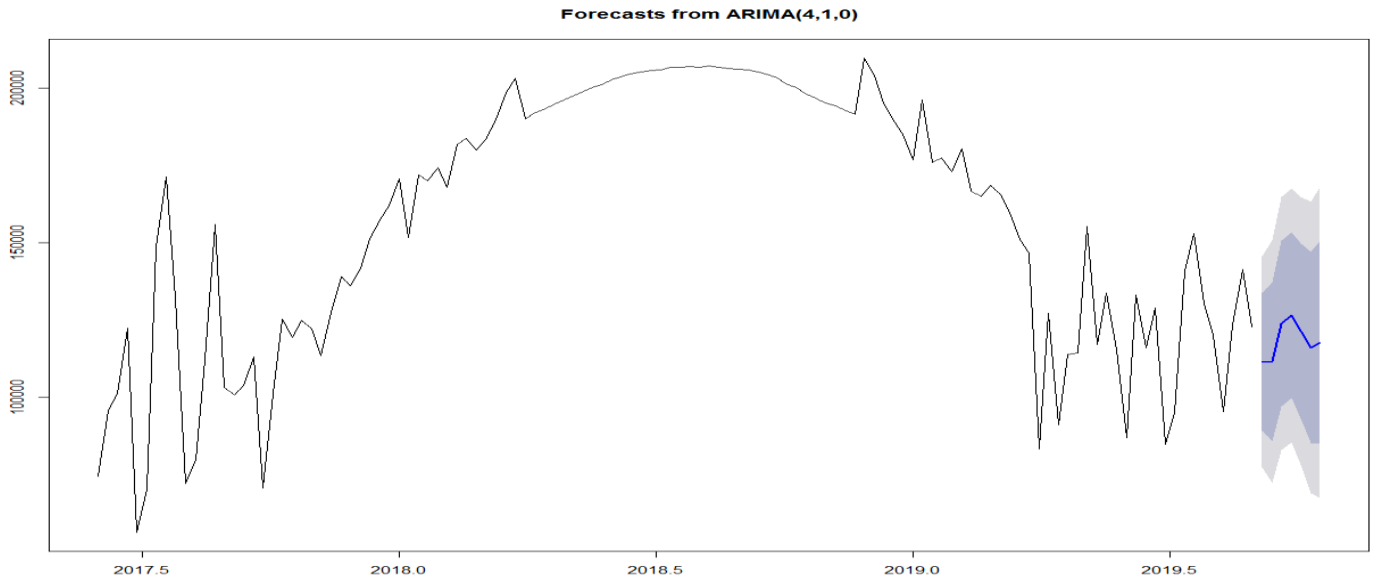
ARIMA Model Forecasts



Future Week	Calls Forecast
Week – 37	142664.9
Week – 38	149975.1
Week – 39	139145.8
Week – 40	129602.1
Week – 41	136057.0
Week – 42	143473.1

MAPE
16.68 %

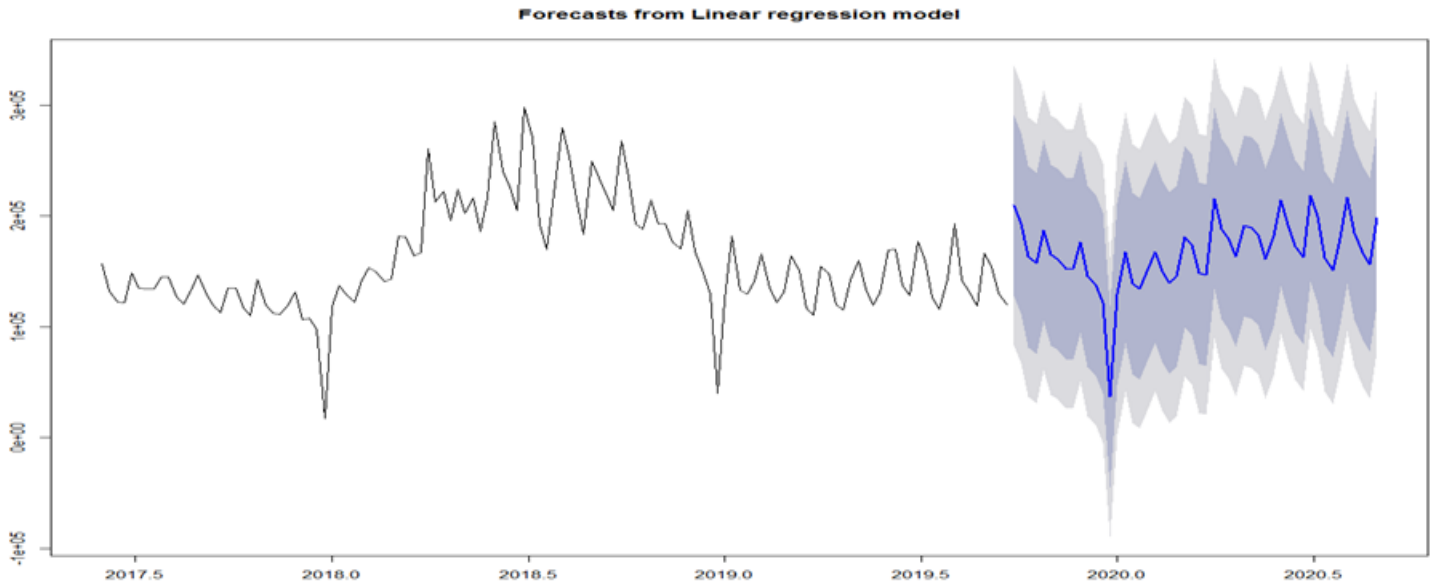
Results and Suggestions – De Seasonal ARIMA



Future Week	Calls Forecast
Week – 37	122906.7
Week – 38	124722.3
Week – 39	121638.0
Week – 40	120014.0
Week – 41	120664.1
Week – 42	122408.3

MAPE
9.51 %

Results and Suggestions – Regression Time Series



Future Week	Calls Forecast
Week – 37	209375.6
Week – 38	193336.1
Week – 39	163228.6
Week – 40	157282.1
Week – 41	186915.1
Week – 42	164963.6

MAPE
20.53 %

FORECASTING RESULTS COMPARISON

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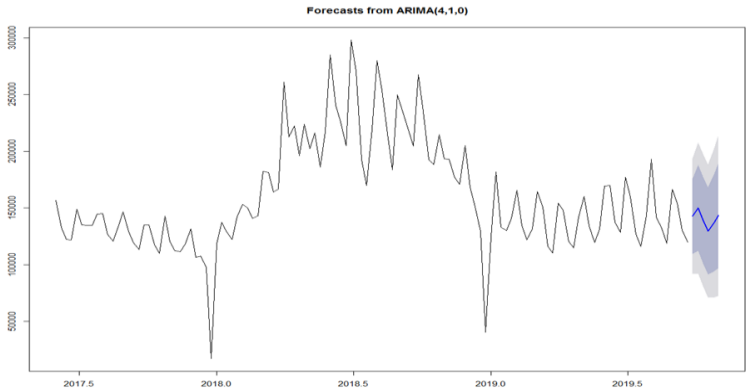
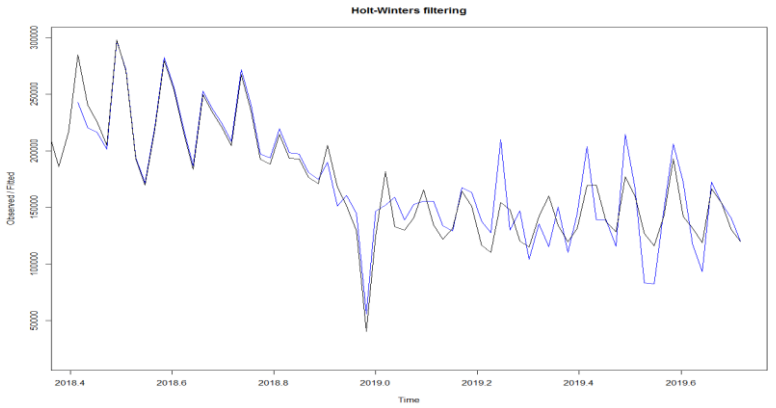
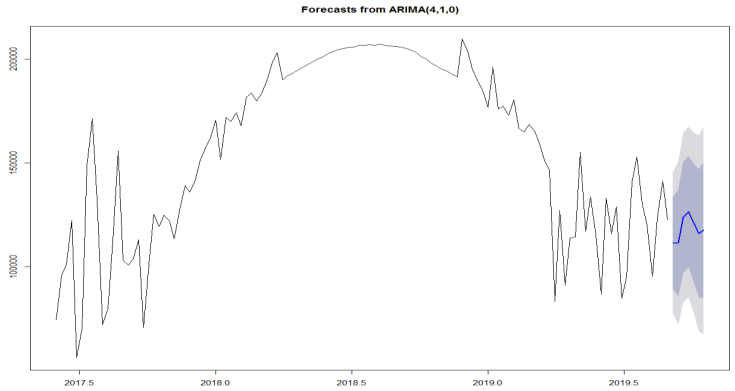


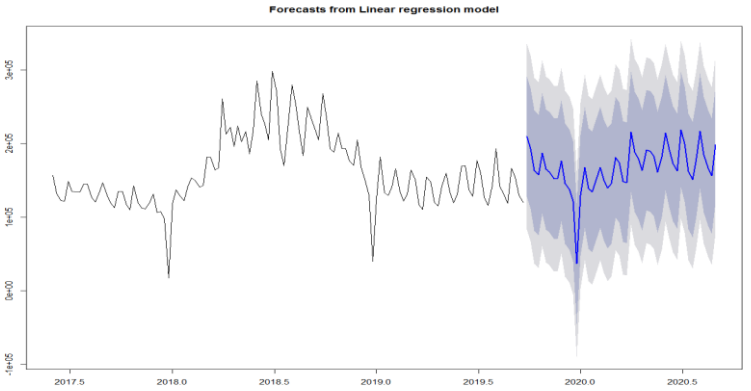
ARIMA Forecasting
MAPE = 16.683



Holt Winters Method
MAPE = 9.61



Deseasonal ARIMA Forecasting
MAPE = 9.181



Time Series Regression
MAPE = 20.536

TIME SERIES FORECASTING – MODEL COMPARISONS

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Model	Accuracy	MAPE
ARIMA	83.317	16.683
De Seasonal ARIMA	90.49	9.51
Holt Winters	87.39	12.61
Linear Regression	79.464	20.536

De Seasonalized ARIMA forecasting should be used as it provides the best results in terms of MAPE and Accuracy.

CONCLUSION

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Traditional Method			
Month	Aug'19	Sep'19	Oct'19
Forecasted Volume	1091045	1062629	1070013
Actual Volume	852801	782411	653800
Forecast Deviation	28%	26%	29%

Statistical Method			
Month	Aug'19	Sep'19	Oct'19
Forecasted Volume	739054.9	693104.1	602943.8
Actual Volume	852801	782411	653800
Forecast Deviation	15%	13%	8%

- Traditional method accuracy : **65 - 75%.**
- Statistical method accuracy : **90%+.**
- The new method helps the business in cost reduction by **10%-15%.**

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THANK YOU