Holts Winters Method

1. Level, Trend, Seasonality 🡪 HW Method
2. Formulas on Mail

ARIMA

Auto Regressive, Integrated, Moving Averages

Steps of ARIMA Modelling:

1. Plot the timeseries and analyze Trend and Seasonality along with Variance.
2. Stabilize the variance using Log Transformation or Box-Cox Transformation

Chart, diagram, line chart

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1. We have to convert Non-Stationary Time Series to Stationary Time Series (Which has constant Trend)
2. This we can do by differentiating the data

Diagram

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1. In ARIMA, I Stands for Integrative as we differentiate the data to get stationary time series. It can be done multiple times represented by ‘d’
2. AR(p) 🡪 Auto Regression of Target Variable (Y)
3. MA(q) 🡪 Moving Averages of Errors (e)

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1. That is why ARIMA is also represented as ARIMA(p,d,q)
2. We can find out the value of p or q using ACF and PACF Plots
3. ACF 🡪 Auto Correlation Function
4. PACF 🡪 Partial Auto Correlation Function

Diagram

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1. ACF 🡪 Takes into consideration all the correlations
2. PACF 🡪 Removes multiple correlations
3. If PACF is sinusoidal we get (q) value or if ACF is sinusoidal we get (p) value
4. ARIMA(p=3,d=2,q) or ARIMA(p, d=2, q=3)
5. ARIMA(3,2,0), ARIMA(3,2,1), ARIMA(3,2,2), ARIMA(3,2,3), ARIMA(2,2,1), ARIMA(1,2,2)
6. Whichever gives us the best AIC, BIC or AICc value, will be the final model
7. Plot the residuals and check whether it similar to a white noise. White Noise means No trend, no seasonality, no cyclicity…
8. **ADF Test (Augmented Dickey Fuller Test) to** find out if data is stationary or not? If value is close to 0 or positive then data is not stationary. IF value is <0, then data is stationary