TIME SERIES
CASE

ACTIVE LEARNING

FORECASTING TRACTOR SALES

BACKGROUND

Business Problem

Deere is a tractor and farm equipment manufacturing company, was established in 1838. The company has shown a consistent growth in its revenue from tractor sales since its inception. However, over the years the company has struggled to keep it's inventory and production cost down because of variability in sales and tractor demand.

The management is under enormous pressure from the shareholders and board to reduce the production cost.

Additionally, they are also interested in understanding the impact of their marketing and farmer connect efforts towards overall sales.

In the same effort, they have hired you as a data science and predictive analytics consultant.

Can you help them in optimizing and solving their Business Problem?

Additional information:

Deere forecast its equipment sales will rise by about 30 percent in 2019. The company expects farmers' net returns per acre in 2019 will rise as much as 20 percent to the highest level in about five years, Chief Finance Officer Rajesh Kalathur said on the call.

Now with this challenging demand, we need data science team to help them.

Create a presentation in form of a story explaining your analysis of the problem and your recommended solution.

PART 1: Data Pre-processing

We need to convert the data into time based format. For the same, break the dates into months and years columns. The requirement is to create a data with 4 columns – Date, Month, Year, Tractor-Sales

PART 2: Visualising the data

Plot Tractor Sales (Y axis) vs Years (X axis) – determine rolling statistics (mean & standard deviation) using rolling function – plot the rolling statistics along with the original plot of tractor sales. Do the same analysis for months – by breaking the sales into months

PART 3: Build time series model

Plot decomposition showing observed, seasonality, trend, & residual – create a seasonal auto regressive integrated moving average model (ARIMA) – check the fitment using diagnostic function

PART 4: Do predictions

Use 'get predictions' function – Plot the predicted values – interpret the credibility of your model