

Time Series for better business insights

Part 1: Importance of time dependent data: Patterns and noise

Every business in this world moves with time, leaving time dependent patterns. So understanding your historical data, analyzing it in depth will help in better engagement with customers.

Before getting in to the technical and theoretical concepts, let's understand using following cases:

1. You are the retail company, following can be done with time:



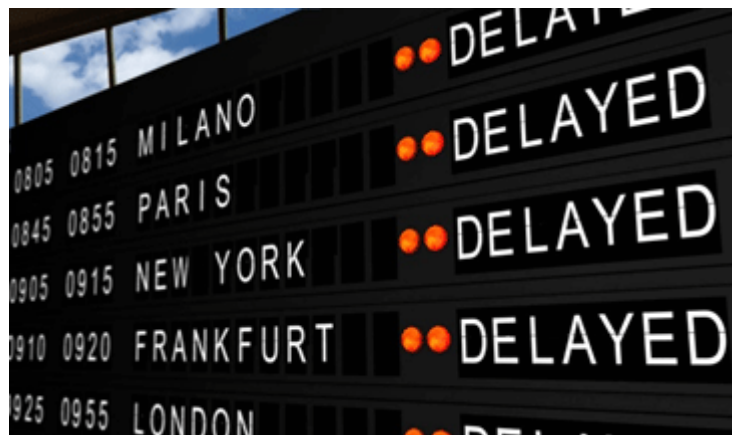
- a. Demand of a particular product, brand, category, company.
- b. Seasonal performance of products.
- c. New trends with new arrivals.
- d. Mark down and mark up with changing seasons and coming festivals.
- e. Unseasonal demand of products: Noise.
- f. Frequency of items bought with time.
- g. Better management of warehouse.
- h. Plan you stock inventories.

2. You are a distributor company, following can be done with time:



- a. Understand buying patterns of stores.
- b. Segmentation of similar stores, based on similar buying patterns on time.
- c. Carry items to store, which store is in most need.
- d. Better journey plans

3. You are a airlines company, following can be done with time:



- a. Optimize travel routes by forecasting seasonal rainfalls, storms and unexpected delays.
- b. You forecasted that there would be storm in the coming days, you can inform customers that flight is cancelled before they reach airport. This way you can be loyal to your customers, and customers in turn will be very happy.
- c. Based on the historical data, you see major accidents happen in particular route, in a particular season; you can avoid it.
- d. Seasonal demand for flights can be forecasted, and acted accordingly with better offers and services.
- e. You can come up with simple deals during the time when you have less journey happening on your charts.

4. You are stocks brokerage company, following can be done with time:



- a. Understand correlations between different stocks.
- b. Invest in the right stocks which are least correlated.
- c. Perhaps stocks are the one which are the most difficult to forecast, yet complex analysis on time will reveal the best patterns to invest in the right stock.
- d. Forecasting market conditions, having a close eye of stocks across different sectors, shift in the political weather will optimize investments and early selling's.
- e. Understand when to buy and sell a stock.

5. You are a supply chain management company, following can be done:



- a. Forecast weather conditions and make better journey plans.
- b. Understand traffic patterns across regions with time, to deliver on time.
- c. Understand driving patterns of truck drivers and forecast the chances of accidents.
- d. Predict the expected delivery time and inform the same to customers.

6. For an e-commerce industry, following can be done:



a. Predict upcoming trends in fashion.

b. Offers on non seasonal products.

In every sector, no matter whatever it is, understanding historical data movements with time will reveal patterns for better business.

Conclusion

Time series analysis is a must for every company to understand seasonality, cyclicity, trend and randomness in the sales and other attributes.