**Demand Forecasting**

**What is it?**

Demand forecasting gives businesses valuable information about the markets in which they operate and the markets they plan to pursue.

Forecasting demand is important as it enables accurate and efficient allocation of resources to a production level that meets anticipated demand.

Incorrect forecasts, either too high or too low, are both economically inefficient and unprofitable.

It has become for business to predict their future prospects in terms of sales, cost and profits. The value of future sales is crucial as it affects costs profits, so the prediction of future sales is the logical starting point of all business planning.

**Why is it critical?**

* It is highly important for business to predict their future prospects in terms of sales, cost and profits. The value of future sales is crucial as it affects costs profits, so the prediction of future sales is the logical starting point of all business planning.
* Preparing a suitable sales policy.
* Long term forecasts are helpful in suitable capital planning. It is one which provides information for major strategic decisions. It helps in saving the wastages in material, man hours, machine time and capacity.
* Planning of a new unit must start with an analysis of the long term demand potential of the products of the firm.

**What are the traditional solutions available and their limitations?**

* Traditional tools lack the ability to integrate diverse data sources like IoT sensors, social media causing forecast accuracy to stagnate.
* Non-linear patterns are difficult to capture and Outliers can bias the estimation of the model parameters.
* Generally, lack of statistical skills and correct consumer marketing acumen results in poor regression. Because it is manually intensive, it suffered from persistent bias and poor planner productivity.

**Yash’s Data Science driven approach**

* Using time series methods like ARIMA for forecasting demand.
* Perform causal analysis by incorporating variables from a multitude of structured and unstructured data sources.
* Forecast demand for finished goods using advanced ML methods like multi-variate, lasso and ridge regression.
* Sensitivity Scenario analysis enables decision makers understand the impact of endogenous factors on sales.
* Variable importance analysis help identify the most significant variables affecting net sales
* Patterns and outliers can be easily identified by effective exploratory data analysis.

**Business Benefits (CRISP DM steps to be shown)**

* Profit maximisation is ensured by offering better control of factors or parameters identified by causal analysis.
* Integration of various data sources like IoT sensors, social media account for a vast range of factors affecting net sales.
* Sensitivity Scenario analysis enables decision makers understand the impact of endogenous factors on sales and help maximise their profits.