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## FORECASTING AND SUPPLY CHAIN

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**Abstract:** A wide variety of forecasting techniques are in use. In many respects they are quite different from each other. Forecasting techniques assume that the same underlying casual system that existed in the past will continue to exist in the future.

1. Forecasts are not perfect, actual results differ from predicted values; the presence of randomness precludes a perfect forecast. Allowances should be made for forecast errors.
2. Forecast accuracy decreases as the time period covered by the forecast-the time horizon-increases. Generally speaking, short range forecasts must be content with fewer uncertainties than longer-range forecasts, so they tend to be more accurate.

**Keyword :** Time Series Graphs, Supply Chain, Forecasting Error, Minitab, Power Bi

### A properly prepared forecast should fulfill certain requirements

1. The forecast should be timely, usually a certain amount of time is needed to respond to the information contained in a forecast. For example, capacity cannot be expanded overnight, nor can inventory levels be changed immediately. Hence the forecasting horizon must cover the time necessary to implement possible changes.
2. The forecast should be accurate, and the degree of accuracy should be stated. This will enable users to plan for possible errors and will provide a basis for comparing alternative forecasts.
3. The forecast should be reliable; it should work consistently. A technique that sometimes provides a good forecast and sometimes poor one will leave users with the uneasy feeling that they may get burned every time a new forecast is issued.
4. The forecast should be expressed in meaningful units. Financial planners need to know how many dollars will be needed, production planners need to know how many units will be needed.
5. The forecast should be in writing.
6. The forecast technique should be simple and easy to understand.
7. The forecast should be cost effective

## **Forecasting and the Supply Chain**

Accurate forecasts are very important for the supply chain. Inaccurate forecasts can lead to shortages and excesses throughout the supply chain. Both shortages and excesses in the supply chain have a negative impact not only on customer service but also on profits. Furthermore, inaccurate forecasts can result in temporary increase and decrease in orders to the supply chain.

### **Steps in the forecasting process**

1. Determine the purpose of the forecast that is how it will be used and when it will be needed?
2. Establish a time horizon the forecast must indicate a time interval, keeping in mind that accuracy decreases as time increases.
3. Obtain, clean and analyze appropriate data.
4. Selecting a forecasting technique
5. Make the forecast
6. Monitor the forecast errors.

Forecast error is the difference between the value that occurs and the value that was predicted for a given time period. Hence error = actual-forecast.

Positive errors result when the forecast is too low, negative errors when the forecast is too high. For example, if actual demand is 100 units and forecast demand was 90 units the forecast was too low; the error is  $100-90 = +10$ .

### **Approaches to forecasting**

There are two general approaches to forecasting; qualitative and quantitative.

In some situations, forecasters rely solely on judgement and opinion to make forecast. If management must have a forecast quickly there may not be enough time to gather and analyze quantitative data.

#### **Executive Opinions**

A small group of upper-level staff may meet and collectively and develop a forecast.

#### **Sales force opinions**

Members of the sales staff or the customers are often good sources of information because of their contact with consumers directly.

#### **Consumer surveys**

because it is the consumers who ultimately determine demand; it seems natural to solicit input from them.

### **Forecasting based on Time-Series Data**

A time series is a time ordered sequence of observations taken at regular intervals (e.g. Hourly, daily, weekly, monthly, quarterly, annually).

Analysis of time series data requires the analyst to identify the underlying behavior of the series.

1. Trend refers to a long term upward or downward movement in the data. Population shifts, changing incomes and cultural changes often account for such movements
2. Cycles are wavelike variations for more than one year's duration these are often to variety of economic, political and even agricultural conditions.

Finally Time series graphs are available in Statistical Software Minitab; if we provide the data to this software it will draw the graph so also Microsoft power BI a powerful data visualization and business intelligence software which can show your sales spread geographically as well as what are the future trends in sales.

