Chapter 1

Forecasting Data and Methods

Qualitative forecasting methods are used when there are no data available.

Quantitative forecasting is applied when:

1. Historical data are available

2. It is reasonable to assume the trends will continue to the future

Time series forecasting will include:

- Stock prices, Profits, Sales, etc

Models include exponential smoothing, decomposition, and ARIMA models.

Predictor variables and time series forecasting

When using predictor variables in a model, we can call that model an **explanatory model** as it helps explain what causes variation in demand.

The statistical forecasting perspective

The further we head into a forecast, the higher the uncertainty becomes. When obtaining a forecast, we are estimating the *middle* of the range of possible values. Thus, a forecast often is accompanied by a **prediction interval**.

- **Point forecasts** are the average of the possible future values

Some notation:

- t - time

- I - information observed

- y - object being forecasted

- $\hat{y}$ - average value of forecast distribution (sometimes refers to median instead)

The **forecast distribution** is the set of values that $y_t | I$ could take, along with their relative probabilities.