

Managerial Economics

M.Com. IV Sem.

Mr. Abhi Dutt Sharma

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Demand Forecasting

- When a product is produced for a market, the demand occurs in the future.
- The production planning cannot be accomplished unless the volume of the demand known.
- The success of the business in supplying the demand in the most efficient & profitable way will then depend on the accuracy of the forecasting process in predicting the future demand.

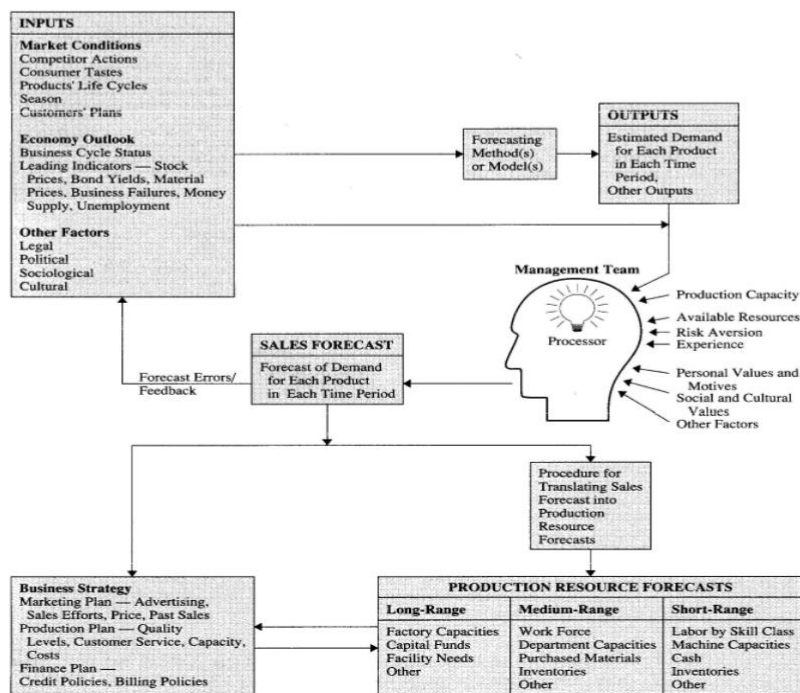
Some Reasons Why Forecasting Is Essential in POM

- 1. New Facility Planning.** It can take as long as five years to design and build a new factory or design and implement a new production process. Such strategic activities in POM require long-range forecasts of demand for existing and new products so that operations managers can have the necessary lead time to build factories and install processes to produce the products and services when needed.
- 2. Production Planning.** Demands for products and services vary from month to month. Production rates must be scaled up or down to meet these demands. It can take several months to change the capacities of production processes. Operations managers need medium-range forecasts so that they can have the lead time necessary to provide the production capacity to produce these variable monthly demands.
- 3. Work Force Scheduling.** Demands for products and services vary from week to week. The work force must be scaled up or down to meet these demands by using reassignment, overtime, layoffs, or hiring. Operations managers need short-range forecasts so that they can have the lead time necessary to provide work force changes to produce the weekly demands.

Some Examples of Things That Must Be Forecasted in POM

Forecast Horizon	Time Span	Examples of Things That Must Be Forecasted	Some Typical Units of Forecasts
Long-range	Years	New product lines Old product lines Factory capacities	Dollars Dollars Gallons, hours, pounds, units, or customers per time period
		Capital funds Facility needs	Dollars Space, volume
Medium-range	Months	Product groups Departmental capacities	Units Hours, strokes, pounds, gallons, units, or customers per time period
		Work force Purchased materials Inventories	Workers, hours Units, pounds, gallons Units, dollars
Short-range	Weeks	Specific products Labor-skill classes Machine capacities	Units Workers, hours Units, hours, gallons, strokes, pounds, or customers per time period
		Cash Inventories	Dollars Units, dollars

1 Forecasting as an Integral Part of Business Planning



Qualitative Forecasting Methods

1. **Executive Committee Consensus.** Knowledgeable executives from various departments within the organization form a committee charged with the responsibility of developing a sales forecast. The committee may use many inputs from all parts of the organization and may have staff analysts provide analyses as needed. Such forecasts tend to be compromise forecasts, not reflecting the extremes that could be present had they been prepared by individuals. This method is the most common forecasting method.
2. **Delphi Method.** This method is used to achieve consensus within a committee. In this method executives anonymously answer a series of questions on successive rounds. Each response is fed back to all participants on each round, and the process is then repeated. As many as six rounds may be required before consensus is reached on the forecast. This method can result in forecasts that most participants have ultimately agreed to in spite of their initial disagreement.
3. **Survey of Sales Force.** Estimates of future regional sales are obtained from individual members of the sales force. These estimates are combined to form an estimate of sales for all regions. Managers must then transform this estimate into a sales forecast to ensure realistic estimates. This is a popular forecasting method for companies that have a good communication system in place and that have salespersons who sell directly to customers.
4. **Survey of Customers.** Estimates of future sales are obtained directly from customers. Individual customers are surveyed to determine what quantities of the firm's products they intend to purchase in each future time period. A sales forecast is determined by combining individual customers' responses. This method may be preferred by companies that have relatively few customers.
5. **Historical Analogy.** This method ties the estimate of future sales of a product to knowledge of a similar product's sales. Knowledge of one product's sales during various stages of its product life cycle is applied to the estimate of sales for a similar product. This method may be particularly useful in forecasting sales of new products.
6. **Market Research.** In *market surveys*, mail questionnaires, telephone interviews, or field interviews form the basis for testing hypotheses about real markets. In *market tests*, products marketed in target regions or outlets are statistically extrapolated to total markets. These methods are ordinarily preferred for new products or for existing products to be introduced into new market segments.

Technique for Demand Forecasting

1. Naïve techniques - adding a certain percentage to the demand for next year.
2. Opinion sampling - collecting opinions from sales, customers etc.
3. Qualitative methods
4. Quantitative methods - based on statistical and mathematical concepts.
 - a. Time series - the variable to be forecast has behaved according to a specific pattern in the past and that this pattern will continue in the future.
 - b. Causal - there is a causal relationship between the variable to be forecast and another variable or a series of variables.

Quantitative Methods of Forecasting

1. Causal – There is a causal relationship between the variable to be forecast and another variable or a series of variables. (Demand is based on the policy, e.g. cement, and build material.
2. Time series – The variable to be forecast has behaved according to a specific pattern in the past and that this pattern will continue in the future.