Module 3
Section A: Demand Management

Term
Abnormal demand

Module 3
Section A: Demand Management

Term
Capable-to-promise (CTP)

Module 3
Section A: Demand Management

Term
Consuming the forecast

Module 3
Section A: Demand Management

Term
Customer relationship management (CRM)

Module 3
Section A: Demand Management

Term
Customer satisfaction

Module 3
Section A: Demand Management

Term
Customer segmentation

Module 3
Section A: Demand Management

Term
Customer service life cycle

Module 3
Section A: Demand Management

Term
Customer service ratio

The process of committing orders against available capacity as well as inventory. This process may involve multiple manufacturing or distribution sites. It is used to determine when a new or unscheduled customer order can be delivered; employs a finite-scheduling model of the manufacturing system to determine when an item can be delivered; and includes any constraints that might restrict the production—such as availability of resources, lead times for raw materials or purchased parts—and requirements for lower-level components or subassemblies. The resulting delivery date takes into consideration production capacity, the current manufacturing environment, and future order commitments. The objective is to reduce the time spent by production planners in expediting orders and adjusting plans because of inaccurate delivery-date promises.

Demand in any period that is outside the limits established by management policy. This demand may come from a new customer or from existing customers whose own demand is increasing or decreasing. Care must be taken in evaluating the nature of the demand. See: outlier.

A marketing process or tool based on putting the customer first. It involves the collection and analysis of information designed for sales and marketing decision support to understand and support existing and potential customer needs. CRM also includes account management, catalog and order entry, payment processing, credits and adjustments, and other functions, and may be integrated with an enterprise resource planning (ERP) system for end-to-end customer satisfaction. See: customer relationship management (CRM) system.

The process of reducing the forecast by customer orders or other types of actual demands as they are received. The adjustments yield the value of the remaining forecast for each period. Syn.: forecast consumption.

The practice of dividing a customer base into groups that are similar in specific ways relevant to marketing. Traditional segmentation focuses on identifying customer groups based on demographics and attributes, such as attitude and psychological profiles. See: market segmentation.

The results of delivering a good or service that meets customer requirements.

A measure of delivery performance of finished goods, usually expressed as a percentage. In a make-to-stock (MTS) environment, this percentage usually represents the number of items or dollars that were shipped on schedule for a specific time period, compared with the total that was supposed to be shipped in that time period. In a make-to-order (MTO) environment, it is usually a comparison of the number of jobs or dollars shipped in a given time period compared with the number of jobs or dollars scheduled. Syns.: customer service level, fill rate, percent of fill. Ant.: stockout percentage.

The four phases of a customer relationship: requirements, acquisition, ownership, and retirement.

Module 3
Section A: Demand Management

Term
Demand management

Module 3
Section A: Demand Management

Term
Design for manufacturability (DFM)

Module 3
Section A: Demand Management

Term
Design for manufacture and assembly (DFMA)

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Term
Design for service

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Section A: Demand Management

Term
Early manufacturing involvement

Module 3
Section A: Demand Management

Term
Early supplier involvement (ESI)

Module 3
Section A: Demand Management

Term
End-of-life product management

Module 3
Section A: Demand Management

Term
Form-fit-function

Simplification of parts, products, and processes to improve quality and reduce manufacturing costs. See: design for manufacturing (DFM).

1) The integration of demand planning upstream and downstream within the supply chain to balance all sources of demand for goods and services with the firm's output capabilities to generate profitable results. Demand management involves prioritizing demand when supply is lacking and responds quickly to changes in demand. Demand management includes the individual processes of planning demand, communicating demand, influencing demand, and prioritizing demand. 2) In marketing and sales, the process of planning, executing, controlling, and monitoring the design, pricing, promotion, and distribution of products and services to bring about transactions that meet organizational and individual needs. See: marketing management, demand planning.

Simplification of parts and processes to improve the after-sales service of a product. Syn.: design for maintainability.

A product development approach that involves the manufacturing function in the initial stages of product design to ensure ease of manufacturing and assembly. See: design for manufacturing (DFM), early manufacturing involvement.

The practice of involving suppliers early in the product design activity to draw on their expertise, insights, and knowledge to more efficiently generate better designs that are easier to manufacture with high quality. See: early manufacturing involvement, participative design/engineering.

Involving manufacturing personnel and customers early in the product design activity to more efficiently generate improved designs that are easier to manufacture with high quality. Early involvement draws on their expertise, knowledge, and insight and provides the design benefits of increased functionality, improved quality, ease of manufacture and assembly, ease of testing and better testing procedures, ease of service, decreased cost, and improved aesthetics. See: design for manufacture and assembly (DFMA), early supplier involvement (ESI), participative design/engineering.

The process of designing a product to meet or exceed the performance requirements expected by customers. See: form utility, voice of the customer (VOC).

Planning for the phase-out of a product to avoid out-of-stock situations, excess inventory, or negative environmental impacts. This involves notifying customers so they can make timely conversions and plan lifetime buys of replacement parts, as well as considering the disposition of the materials.

Module 3
Section A: Demand Management

Term
Market segmentation

Module 3
Section A: Demand Management

Term
Order fulfillment lead time

Module 3
Section A: Demand Management

Term
Plan-do-check-act (PDCA)

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Section A: Demand Management

Term
Probability

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Section A: Demand Management

Term
Product-mix flexibility

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Section A: Demand Management

Term
Stockout probability

Module 3
Section A: Demand Management

Term
Strategic drivers

Module 3
Section A: Demand Management

Term
Time-based competition (TBC)

The average amount of time between the customer's order and the customer's receipt of delivery. This includes every manufacturing or processing step in between.

A marketing strategy in which the total market is disaggregated into submarkets, or segments, that share some measurable characteristic based on demographics, psychographics, lifestyle, geography, benefits, and so forth. See: customer segmentation, demographic segmentation.

Mathematically, a number between 0 and 1 that estimates the fraction of experiments (if the same experiment were being repeated many times) in which a particular result would occur. This number can be either subjective or based upon the empirical results of experimentation. It can also be derived for a process to give the probable outcome of experimentation.

A four-step process for quality improvement. In the first step (plan), a performance gap is identified, and a plan to effect improvement is developed. In the second step (do), the plan is carried out, preferably on a small scale. In the third step (check), the effects of the plan are monitored. In the last step (act), the results are studied to determine what was learned and what can be predicted to take corrective action or institutionalize the changes. Syns.: plan-do-check-act (PDCA) cycle, Shewhart circle of quality, Shewhart cycle, Deming circle.

The percentage chance of a product not being in stock when an order is placed. Syn.: cycle service level.

The ability to change over quickly to other products produced in a facility, as required by demand shifts in mix.

A broad-based corporate strategy that emphasizes time as the vehicle for achieving and maintaining a sustainable competitive edge. Its characteristics are as follows: (1) It deals only with those lead times that are important to the customers, (2) the lead-time reductions must involve decreases in both the mean and the variance, and (3) the lead-time reductions must be achieved through system or process analysis (the processes must be changed to reduce lead times). Reductions in lead times are achieved by changing the processes and the decision structures used to design, produce, and deliver products to the customers. TBC involves design, manufacturing, and logistical processes.

Factors that influence business unit and manufacturing strategies.

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Section A: Demand Management

Term
Trend forecasting models

Module 3
Section A: Demand Management

Term
Value perspective

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Section B: Sources of Demand/Forecasting

Term
Actual demand

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Section B: Sources of Demand/Forecasting

Term
Adaptive smoothing

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Term
Backorder

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Term
Base series

Module 3
Section B: Sources of Demand/Forecasting

Term
Business-to-business (B2B)

Module 3
Section B: Sources of Demand/Forecasting

Term
Business-to-consumer (B2C)

A quality perspective that holds that quality must be judged, in part, by how well the characteristics of a particular product or service align with the needs of a specific user.

Methods for forecasting sales data when a definite upward or downward pattern exists. Models include double exponential smoothing, regression, and triple smoothing. See: trend analysis.

A form of exponential smoothing in which the smoothing constant is automatically adjusted as a function of forecast error measurement.

Demand that is composed of customer orders or allocations of items, ingredients, or raw materials to production or distribution. Actual demand nets against or “consumes” the forecast, depending upon the rules chosen over a time horizon. For example, actual demand will totally replace forecast inside the demand time fence (DTF) horizon but will net against the forecast outside this horizon based on the chosen forecast consumption rule. See: booked orders.

A standard succession of values of demand-over-time data used in forecasting seasonal items. This series of factors is usually based on the relative level of demand during the corresponding period of previous years. The average value of the base series over a seasonal cycle is 1.0. A figure higher than 1.0 indicates that demand for that period is higher than average; a figure less than 1.0 indicates less-than-average demand. For forecasting purposes, the base series is superimposed upon the average demand and trend in demand for the item in question. Syn.: base index. See: seasonal index, seasonality.

An unfilled customer order or commitment. A backorder is an immediate (or past-due) demand against an item whose inventory is insufficient to satisfy the demand. See: stockout.

Business conducted between businesses and final consumers, bypassing any third-party entities. It includes traditional brick-and-mortar businesses that may or may not also offer products and services online as well as businesses that trade exclusively on the internet.

Business conducted between two organizations, often via e-commerce. This type of connectivity allows businesses to act as a virtual supply chain management entity in order to reduce costs, improve quality, reduce delivery lead times, and improve due-date performance.

Module 3
Section B: Sources of Demand/Forecasting

Term
Correlation

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Section B: Sources of Demand/Forecasting

Term
Curve fitting

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Term
Delphi method

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Term
Demand forecasting

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Term
Dependent demand

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Section B: Sources of Demand/Forecasting

Term
Distribution channel

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Section B: Sources of Demand/Forecasting

Term
Distributor

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Section B: Sources of Demand/Forecasting

Term
Double exponential smoothing

An approach to forecasting based on a straight line, polynomial, or other curve that describes some historical time series data.

The relationship between two sets of data such that when one changes, the other is likely to make a corresponding change. If the changes are in the same direction, there is positive correlation. When changes tend to occur in opposite directions, there is negative correlation. When there is little correspondence or changes are random, there is no correlation.

Forecasting the demand for a particular good, component, or service.

A qualitative forecasting technique in which the opinions of experts are combined anonymously in a series of iterations so that the experts' opinions gradually converge to a consensus forecast. See: management estimation, panel consensus.

The distribution route, from raw materials through consumption, along which products travel toward the consumer. See: marketing channel.

Demand that is directly related to or derived from the bill-of-material structure for other components or end products. Such requirements are therefore calculated instead of forecasted. A given inventory item may have both dependent and independent demand at any given time. For example, a part may simultaneously be the component of an assembly and sold as a service part. See: derived demand, independent demand.

A method of exponential smoothing for trend situations that employs two previously computed weighted averages, the singly and doubly smoothed values, to extrapolate into the future. Syn.: second-order smoothing.

A business that does not manufacture its own products but instead purchases and supplies these products to customers, usually from a stock of finished goods inventory. Distributors often have a long-term relationship with specific manufacturers and help them market their products to customers. See: wholesaler.

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Section B: Sources of Demand/Forecasting

Term
Econometric model

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Section B: Sources of Demand/Forecasting

Term
Exponential smoothing forecast

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Section B: Sources of Demand/Forecasting

Term
Extrinsic forecasting method

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Section B: Sources of Demand/Forecasting

Term
First-order smoothing

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Section B: Sources of Demand/Forecasting

Term
Forecast

Module 3
Section B: Sources of Demand/Forecasting

Term
Forecast horizon

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Section B: Sources of Demand/Forecasting

Term
Forecast interval

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Section B: Sources of Demand/Forecasting

Term
Forecasting

A type of weighted moving average forecasting technique in which past observations are geometrically discounted according to their age. The heaviest weight is assigned to the most recent data. The smoothing is termed exponential because data points are weighted in accordance with an exponential function of their age. The technique makes use of a smoothing constant to apply to the difference between the most recent forecast and the critical sales data, thus avoiding the necessity of carrying historical sales data. The approach can be used for data that exhibits no trend or seasonal patterns. Higher order exponential smoothing models can be used for data with either (or both) trend and seasonality.

A set of equations intended to be used simultaneously to capture the way in which dependent and independent variables are interrelated.

1) A single exponential smoothing. 2) A weighted moving average approach that is applied to forecasting problems in which the data does not exhibit significant trend or seasonal patterns. Syn.: single exponential smoothing, single smoothing.

A forecast method using a correlated leading indicator; for example, estimating furniture sales based on housing starts. Extrinsic forecasts tend to be more useful for large aggregations, such as total company sales, than for individual product sales. Ant.: intrinsic forecast method. See: quantitative forecasting techniques.

The period of time into the future for which a forecast is prepared.

An estimate of future demand. A forecast can be constructed using quantitative methods, qualitative methods, or a combination of methods, and it can be based on extrinsic (external) or intrinsic (internal) factors. Various forecasting techniques attempt to predict one or more of the four components of demand: cyclical, random, seasonal, and trend. Syn.: sales forecast. See: Box-Jenkins model, exponential smoothing forecast, extrinsic forecasting method, intrinsic forecast method, moving average forecast, qualitative forecasting technique, quantitative forecasting techniques.

The business function that attempts to predict sales and use of products so they can be purchased or manufactured in appropriate quantities in advance.

The time unit for which forecasts are prepared, such as week, month, or quarter. Syn.: forecast period.

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Section B: Sources of Demand/Forecasting

Term
Historical analogy

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Section B: Sources of Demand/Forecasting

Term
Independent demand

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Term
Intrinsic forecast method

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Section B: Sources of Demand/Forecasting

Term
Leading indicator

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Term
Least-squares method

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Section B: Sources of Demand/Forecasting

Term
Life cycle analysis

Module 3
Section B: Sources of Demand/Forecasting

Term
Moving average forecast

Module 3
Section B: Sources of Demand/Forecasting

Term
Multiple regression model

The demand for an item that is unrelated to the demand for other items. Demand for finished goods, parts required for destructive testing, and service parts requirements are examples of independent demand. See: dependent demand.

A judgmental forecasting technique based on identifying a sales history that is analogous to a present situation, such as the sales history of a similar product, and using that past pattern to predict future sales. See: management estimation, qualitative forecasting technique.

A specific business activity index that indicates future trends. For example, housing starts is a leading indicator for the industry that supplies builders' hardware.

A forecast based on internal factors, such as an average of past sales. Ant.: extrinsic forecasting method.

1) Syn.: life cycle assessment (LCA). 2) A quantitative forecasting technique that is based on applying past patterns of demand data and that covers introduction, growth, maturity, saturation, and decline of similar products to a new product family. See: product life cycle.

A method of curve fitting that estimates a line of best fit through a plot of data to minimize the sum of squared differences between the data points and the line. See: regression analysis.

A form of regression analysis that includes more than one independent variable, such as developing a forecast of dishwasher demand based upon housing starts, gross national product, and disposable income. Syn.: multilinear regression analysis.

A forecast created using an arithmetic average of a certain number (n) of the most recent observations. As each new observation is added, the oldest observation is dropped. The value of n (the number of periods to use for the average) reflects responsiveness versus stability in the same way that the choice of smoothing constant does in exponential smoothing. This method smooths out short-term fluctuations and highlights longer-term behavior in the data pattern. See: average demand, forecast, simple moving average, weighted moving average.

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Section B: Sources of Demand/Forecasting

Term
Panel consensus

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Term
Product mix forecast

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Term
Pyramid forecasting

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Term
Qualitative forecasting technique

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Term
Quantitative forecasting techniques

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Term
Regression analysis

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Term
Seasonal index

Module 3
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Term
Seasonality

A forecast of the proportion of products that will be sold within a given product family or the proportion of options ordered within a product line. An inaccurate product mix forecast can create material and inventory shortages even if the aggregate product line or product family demand forecast is accurate.

A judgmental forecasting technique by which a committee, sales force, or group of experts arrives at a sales estimate through open discussion. See: Delphi method, management estimation.

An approach to forecasting that is based on intuitive or judgmental evaluation. It is used generally when data is scarce, not available, or no longer relevant. Common types of qualitative techniques include personal insight, sales force estimates, panel consensus, market research, visionary forecasting, and the Delphi method. Examples include developing long-range projections and new product introductions. See: historical analogy, jury of executive opinion.

A forecasting technique that enables management to review and adjust forecasts made at an aggregate level and to keep lower-level forecasts in balance. The approach combines the stability of aggregate forecasts and the application of management judgment with the need to forecast many end-items within the constraints of an aggregate forecast or sales plan.

A statistical technique for determining the best mathematical expression describing the functional relationship between or among one response and one or more independent variables. See: least-squares method.

An approach to forecasting in which historical demand data is used to project future demand. Extrinsic and intrinsic techniques are typically used. See: extrinsic forecasting method, intrinsic forecast method.

A predictable, repetitive pattern of demand measured within a year, during which time the demand grows and declines. These are calendar-related patterns that can appear annually, quarterly, monthly, weekly, daily and/or hourly. Syn.: seasonal variation. See: base series.

1) A number used to adjust data to seasonal demand. 2) Manipulations to the buffer size that affect inventory positions by adjusting buffers to follow seasonal patterns. Syn.: seasonal adjustment. See: base series.

Module 3
Section B: Sources of Demand/Forecasting

Term
Smoothing constant

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Term
Time bucket

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Term
Time series analysis

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Term
Time series decomposition

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Term
Time series forecasting

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Term
Transaction channel

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Term
Trend

Module 3
Section B: Sources of Demand/Forecasting

Term
Weighted moving average

A number of days of data summarized into a columnar or row-wise display. For example, a weekly time bucket contains all the relevant data for an entire week. Weekly time buckets are considered to be the largest possible (at least in the near and medium term) to permit effective material requirements planning (MRP).

In exponential smoothing, the weighting factor that is applied to the most recent demand, observation, or error. In this case, the error is defined as the difference between actual demand and the forecast for the most recent period. The weighting factor is represented by the symbol α. Theoretically, the range of α is 0.0 to 1. Syns.: alpha factor, smoothing factor.

A method of forecasting that separates time series data into as many as three predictable components: trend, seasonal, and cyclical. The forecast is created by projecting the predictable patterns individually and then combining them into one forecast. See: cyclical component, random component, seasonal component, trend component.

Analysis of any variable classified by time in which the values of the variable are functions of the time periods. Time series analysis is used in forecasting. A time series consists of seasonal, cyclical, trend, and random components. See: cyclical component, random component, seasonal component, trend component.

A distribution network that deals with change of ownership of goods and services including the activities of negotiation, selling, and contracting.

A forecasting method that projects historical data patterns into the future. It involves the assumption that the near-term future will be like the recent past.

An averaging technique in which the data to be averaged is not uniformly weighted but is given values according to its importance. See: moving average forecast, simple moving average.

General upward or downward movement of a variable over time (e.g., demand or process attribute).

Module 3
Section C: Forecast Performance

Term
Bias

Module 3
Section C: Forecast Performance

Term
Bullwhip effect

Module 3
Section C: Forecast Performance

Term
Collaborative planning, forecasting, and replenishment (CPFR)

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Section C: Forecast Performance

Term
Cumulative forecast error (CFE)

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Section C: Forecast Performance

Term
Demand filter

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Section C: Forecast Performance

Term
Distribution of forecast errors

Module 3
Section C: Forecast Performance

Term
Extrapolation

Module 3
Section C: Forecast Performance

Term
Focus forecasting

An extreme change in the supply position upstream in a supply chain generated by a small change in demand downstream in the supply chain. Inventory can quickly move from being backordered to being excess. This is caused by the serial nature of communicating orders up the chain with the inherent transportation delays of moving product down the chain. The bullwhip effect can be eliminated by synchronizing the supply chain.

A consistent deviation from the mean in one direction (high or low). A normal property of a good forecast is that it is not biased. See: average forecast error.

The accumulated total of all forecast errors, both positive and negative. This sum will approach zero if the forecast is unbiased. Syn.: sum of deviations.

A collaboration process in which supply chain trading partners jointly develop plans for demand management and demand fulfillment activities to establish a shared vision of how products will be promoted and sold over the planning horizon. The trading partners share demand forecasts and replenishment plans iteratively until they agree to a consensus forecast, which they use to develop production and shipment plans designed to support the collaborative demand forecast. See: collaborative planning.

Tabulation of the forecast errors according to the frequency of occurrence of each error value. The errors in forecasting are, in many cases, normally distributed even when the observed data does not come from a normal distribution.

A standard set to monitor sales data for individual items in forecasting models. It is usually set to be tripped when the demand for a period differs from the forecast by more than some number of mean absolute deviations.

A system that allows the user to simulate the effectiveness of numerous forecasting techniques, enabling selection of the most effective one.

Estimation of the future value of some data series based on past observations. Statistical forecasting is a common example. Syn.: projection.

Module 3
Section C: Forecast Performance

Term
Forecast error

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Section C: Forecast Performance

Term
Forecast management

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Term
Mean

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Section C: Forecast Performance

Term
Mean absolute deviation (MAD)

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Section C: Forecast Performance

Term
Median

Module 3
Section C: Forecast Performance

Term
Mode

Module 3
Section C: Forecast Performance

Term
Normal distribution

Module 3
Section C: Forecast Performance

Term
Outlier

The process of developing, checking, correcting, and using forecasts. It also includes determination of the forecast horizon.

The difference between actual demand and forecast demand. Forecast error can be represented several different ways: mean absolute deviation, mean absolute percent error, and mean squared error. See: deviation, mean absolute deviation (MAD), mean absolute percent error (MAPE), mean squared error (MSE).

The average of the absolute values of the deviations of observed values from some expected value. MAD can be calculated based on observations and the arithmetic mean of those observations. In forecasting, MAD is calculated as the arithmetic mean of the absolute forecast error values. See: absolute error, forecast error.

The arithmetic average of a group of values. Syn.: arithmetic mean.

The most common or frequent value in a group of values.

The middle value in a set of measured values when the items are arranged in order of magnitude. If there is no single middle value, the median is the mean of the two middle values.

A data point that differs significantly from other observations within a dataset. For example, if the average sales for a product were 10 units per month, and one month the product had sales of 500 units, this sales point might be considered an outlier. The outlier could represent actual conditions, or it could be the result of an error in data entry or management. See: abnormal demand.

A particular statistical distribution in which most of the observations fall fairly close to one mean and a deviation from the mean is as likely to be plus as it is to be minus. When graphed, the normal distribution takes the form of a bell-shaped curve.

Module 3
Section C: Forecast Performance

Term
Probability distribution

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Section C: Forecast Performance

Term
Sample

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Section C: Forecast Performance

Term
Sampling distribution

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Section C: Forecast Performance

Term
Standard deviation

Module 3
Section C: Forecast Performance

Term
Tracking signal

A portion of a universe of data chosen to estimate some characteristics about the whole universe. The universe of data could consist of sizes of customer orders, number of units of inventory, number of lines on a purchase order, and so forth.

A table of numbers or a mathematical expression that indicates the frequency with which each of all possible results of an experiment should occur.

A measurement of dispersion of data or of a variable. The standard deviation is computed by finding the differences between the average and actual observations, squaring each difference, adding the squared differences, dividing by n - 1 (for a sample), and taking the square root of the result. See: dispersion, estimate of error.

The distribution of values of a statistic calculated from samples of a given size.

A measure used to evaluate whether the actual demand reflects the forecasting method's assumptions about demand behavior. It is the ratio of the cumulative forecast errors to the mean absolute deviation (MAD). See: forecast error.