Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Demand management APICS CPIM Learning System © 2023	**Term** Trend forecasting models APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Customer relationship management (CRM) APICS CPIM Learning System © 2023	**Term** Customer service life cycle APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Value perspective APICS CPIM Learning System © 2023	**Term** Consuming the forecast APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Order fulfillment lead time APICS CPIM Learning System © 2023	**Term** Capable-to-promise (CTP) APICS CPIM Learning System © 2023

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.	1) The function of recognizing all demands for goods and services to support the marketplace. It involves prioritizing demand when supply is lacking. [This] facilitates the planning and use of resources for profitable business results. 2) In marketing, 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. Syn: marketing management. See: demand planning.
In information systems, a model that describes the customer relationship as having four phases: requirements, acquisition, ownership, and retirement.	A marketing philosophy based on putting the customer first. Involves the collection and analysis of information designed for sales and marketing decision support (in contrast to enterprise resources planning information) to understand and support existing and potential customer needs. Includes account management, catalog and order entry, payment processing, credits and adjustments, and other functions. Syn: customer relations management.
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.	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.
The process of committing orders against available capacity as well as inventory. This process may involve multiple manufacturing or distribution sites. 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. 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.	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.

Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Abnormal demand APICS CPIM Learning System © 2023	**Term** Probability APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Stockout probability APICS CPIM Learning System © 2023	**Term** Customer satisfaction APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Customer service level APICS CPIM Learning System © 2023	**Term** Plan-do-check-action (PDCA) APICS CPIM Learning System © 2023
Module 3 *Section A: Demand Management*	**Module 3** *Section A: Demand Management*
Term Early manufacturing involvement APICS CPIM Learning System © 2023	**Term** Early supplier involvement (ESI) APICS CPIM Learning System © 2023

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.	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: Is it a volume change? Is it a change in product mix? Is it related to the timing of the order? See: outlier.
The results of delivering a good or service that meets customer requirements.	Syn: cycle service level.
A four-step process for quality improvement. In the first step[...], a plan to effect improvement is developed. In the second step[...], the plan is carried out, preferably on a small scale. In the third step[...], the effects of the plan are observed. In the last step[...], the results are studied to determine what was learned and what can be predicted. [This] cycle is sometimes referred to as the Shewhart cycle (because Walter A. Shewhart discussed the concept in his book, Statistical Method from the Viewpoint of Quality Control) or as the Deming circle (because W. Edwards Deming introduced the concept in Japan and the Japanese subsequently called it the Deming circle). Syn: plan-do-check-act cycle, Shewhart circle of quality, Shewhart cycle. See: Deming circle.	A measure of delivery performance of finished goods or other cargo, usually expressed as a percentage.
The process of involving suppliers early in the product design activity and drawing on their expertise, insights, and knowledge to generate better designs in less time and designs that are easier to manufacture with high quality. See: participative design/engineering.	The process of involving manufacturing personnel early in the product design activity and drawing on their expertise, insights, and knowledge to generate better designs in less time and to generate designs that are easier to manufacture. Early involvement of manufacturing, field service, suppliers, customers, and so on means drawing on their expertise, knowledge, and insight to improve the design. Benefits include increased functionality, increased quality, ease of manufacture and assembly, ease of testing, better testing procedures, ease of service, decreased cost, and improved aesthetics. See: design for manufacture and assembly, participative design/engineering.

Module 3

Section A: Demand Management

Term

Design for manufacturability

Module 3

Section A: Demand Management

Term

Design for manufacture and assembly (DFMA)

Module 3

Section A: Demand Management

Term

Design for service

Module 3

Section A: Demand Management

Term

Form-fit-function

Module 3

Section B: Sources of Demand/Forecasting

Term

Business-to-business commerce (B2B)

Module 3

Section B: Sources of Demand/Forecasting

Term

Business-to-consumer sales (B2C)

Module 3

Section B: Sources of Demand/Forecasting

Term

Distribution channel

Module 3

Section B: Sources of Demand/Forecasting

Term

Transaction channel

A product development approach that involves the manufacturing function in the initial stages of product design to ensure ease of manufacturing and assembly. See: early manufacturing involvement.	Simplification of parts, products, and processes to improve quality and reduce manufacturing costs.
A term used to describe the process of designing a part or product to meet or exceed the performance requirements expected by customers.	Simplification of parts and processes to improve the after-sale service of a product. Syn: design for maintainability.
Business being conducted between businesses and final consumers, largely over the internet. It includes traditional brick and mortar businesses that also offer products online and businesses that trade exclusively on the internet.	Business conducted over the internet between businesses. The implication is that this connectivity will cause businesses to transform themselves via supply chain management to become virtual organizations—reducing costs, improving quality, reducing delivery lead time, and improving due-date performance.
A distribution network that deals with change of ownership of goods and services including the activities of negotiation, selling, and contracting.	The distribution route, from raw materials through consumption, along which products travel. See: channels of distribution, marketing channel.

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Distributor	**Term** Independent demand
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Dependent demand	**Term** Forecast
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Forecasting	**Term** Demand forecasting
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Actual demand	**Term** Forecast horizon
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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 business that does not manufacture its own products but instead purchases and resells these products. Such a business usually maintains a finished goods inventory. Syn: wholesaler.
An estimate of future demand [that] 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 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 forecasting method, moving average forecast, qualitative forecasting method, quantitative forecasting method.	Demand that is directly related to or derived from the bill-of-material structure for other items or end products. Such demands are therefore calculated and need not and should not be forecast. A given inventory item may [also have] 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: independent demand.
Forecasting the demand for a particular good, component, or service.	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 period of time into the future for which a forecast is prepared.	[Composed] of customer orders (and often allocations of items, ingredients, or raw materials to production or distribution). [This] nets against or “consumes” the forecast, depending upon the rules chosen over a time horizon. For example, [this] will totally replace forecast inside the sold-out customer order backlog horizon (often called the demand time fence) but will net against the forecast outside this horizon based on the chosen forecast consumption rule.

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Forecast interval	**Term** Time bucket
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Seasonality	**Term** Trend
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Backorder	**Term** Mix forecast
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Qualitative forecasting techniques	**Term** Quantitative forecasting techniques
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A number of days of data summarized into a columnar or row-wise display. For example, a weekly [type of this] contains all the relevant data for an entire week [and is] considered to be the largest possible (at least in the near and medium term) to permit effective MRP.	The time unit for which forecasts are prepared, such as week, month, or quarter. Syn: forecast period.
General upward or downward movement of a variable over time (e.g., demand, process attribute).	A predictable repetitive pattern of demand measured within a year where 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.
Forecast of the proportion of products that will be sold within a given product family, or the proportion of options offered within a product line. Product and option mix as well as aggregate product families must be forecasted. Even though the appropriate level of units is forecasted for a given product line, [...] material shortages and inventory problems [can be created if this is inaccurate].	An unfilled customer order or commitment. [This is] an immediate (or past due) demand against an item whose inventory is insufficient to satisfy the demand. See: stockout.
An approach to forecasting where historical demand data is used to project future demand. Extrinsic and intrinsic techniques are typically used. See: extrinsic forecasting method, intrinsic forecasting method.	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...] 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.

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Historical analogy APICS CPIM Learning System © 2023	**Term** Panel consensus APICS CPIM Learning System © 2023
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Term Delphi method APICS CPIM Learning System © 2023	**Term** Pyramid forecasting APICS CPIM Learning System © 2023
Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Extrinsic forecasting method APICS CPIM Learning System © 2023	**Term** Correlation APICS CPIM Learning System © 2023
Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Regression analysis APICS CPIM Learning System © 2023	**Term** Leading indicator APICS CPIM Learning System © 2023

A judgmental forecasting technique by which a committee, sales force, or group of experts arrives at a sales estimate. See: Delphi method, management estimation.	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.
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. The procedure begins with the roll up (aggregation) of item forecasts into forecasts by product group. The management team establishes a (new) forecast for the product group. The value is then forced down (disaggregation) to individual item forecasts so they are consistent with the aggregate plan. See: management estimation, planning bill of material, product group forecast.	A qualitative forecasting technique where the opinions of experts are combined in a series of iterations. The results of each iteration are used to develop the next, so that convergence of the experts' opinions is obtained. See: management estimation, panel consensus.
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, [this is positive]. When changes tend to occur in opposite directions, [this is negative]. When there is little correspondence or changes are random, [this is nonexistant].	A forecast method using a correlated leading indicator; for example, estimating furniture sales based on housing starts. [These] 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 technique.
A specific business activity index that indicates future trends. [Housing starts is an example of this] for the industry that supplies builders' hardware.	A statistical technique for determining the best mathematical expression describing the functional relationship between one response and one or more independent variables. See: least-squares method.

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Least-squares method	**Term** Curve fitting
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Multiple regression models	**Term** Econometric model
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Intrinsic forecast method	**Term** Time series forecasting
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Time series analysis	**Term** Life cycle analysis
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An approach to forecasting based on a straight line, polynomial, or other curve that describes some historical time series data.	A method of curve fitting that selects a line of best fit through a plot of data to minimize the sum of squares of the deviations of the given points from the line. See: regression analysis.
A set of equations intended to be used simultaneously to capture the way in which dependent and independent variables are interrelated.	A form of regression analysis where the model involves more than one independent variable, such as developing a forecast of dishwasher sales based upon housing starts, gross national product, and disposable income.
A forecasting method that projects historical data patterns into the future. Involves the assumption that the near-term future will be like the recent past.	A forecast based on internal factors, such as an average of past sales. Ant: extrinsic forecast.
A quantitative forecasting technique based on applying past patterns of demand data covering introduction, growth, maturity, saturation, and decline of similar products to a new product family.	Analysis of any variable classified by time in which the values of the variable are functions of the time periods. [This is used in forecasting...]

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Seasonal index	**Term** Base series
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Moving average	**Term** Weighted moving average
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Exponential smoothing forecast	**Term** Smoothing constant
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Adaptive smoothing	**Term** First-order smoothing
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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 [this] 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, [it] is superimposed upon the average demand and trend in demand for the item in question. Syn: base index. See: seasonal index, seasonality.	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.
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, simple moving average.	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. There are two [types...]: simple and weighted. See: simple moving average, weighted moving average.
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. Syn: alpha factor, smoothing factor.	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. [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 [...] models can be used for data with either (or both) trend and seasonality.
A single exponential smoothing; a weighted moving average approach that is applied to forecasting problems where the data does not exhibit significant trend or seasonal patterns. Syn: single exponential smoothing, single smoothing.	A form of exponential smoothing in which the smoothing constant is automatically adjusted as a function of forecast error measurement.

Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Single exponential smoothing	**Term** Second-order smoothing
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Module 3 *Section B: Sources of Demand/Forecasting*	**Module 3** *Section B: Sources of Demand/Forecasting*
Term Double smoothing	**Term** Decomposition
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Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Extrapolation	**Term** Mean
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Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Median	**Term** Mode
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A method of exponential smoothing for trend situations that employs two previously computed averages, the singly and doubly smoothed values, to extrapolate into the future. Syn: double smoothing.	Syn: first-order smoothing.
A method of forecasting where time series data is separated into up to three components—trend, seasonal, and cyclical—where trend includes the general horizontal upward or downward movement over time; seasonal includes a recurring demand pattern such as day of the week, weekly, monthly, or quarterly; and cyclical includes any repeating, nonseasonal pattern. A fourth component is random —that is, data with no pattern. The new forecast is made by projecting the patterns individually determined and then combining them. See: cyclical component, random component, seasonal component, trend component.	Syn: second-order smoothing.
The arithmetic average of a group of values. Syn: arithmetic mean.	Estimation of the future value of some data series based on past observations. Statistical forecasting is a common example. Syn: projection.
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, [it] is the mean of the two middle values.

Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Normal distribution APICS CPIM Learning System © 2023	**Term** Outlier APICS CPIM Learning System © 2023
Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Probability distribution APICS CPIM Learning System © 2023	**Term** Sample APICS CPIM Learning System © 2023
Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Sampling distribution APICS CPIM Learning System © 2023	**Term** Forecast error APICS CPIM Learning System © 2023
Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Bias APICS CPIM Learning System © 2023	**Term** Distribution of forecast errors APICS CPIM Learning System © 2023

A data point that differs significantly from other data for a similar phenomenon. 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 example of this]. See: abnormal demand.	A particular statistical distribution where 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, [it] takes the form of a bell-shaped curve.
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.
The difference between actual demand and forecast demand. [It] can be represented several different ways: mean absolute deviation (MAD); mean absolute percentage error (MAPE); and mean squared error (MSE). See: mean absolute deviation (MAD), mean absolute percentage error (MAPE), mean squared error (MSE).	The distribution of values of a statistic calculated from samples of a given size.
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 consistent deviation from the mean in one direction (high or low). A normal property of a good forecast is that it is not [affected by this]. See: average forecast error.

Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Mean absolute deviation (MAD)	**Term** Demand filter
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Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Tracking signal	**Term** Standard deviation
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Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Forecast management	**Term** Focus forecasting
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Module 3 *Section C: Forecast Performance*	**Module 3** *Section C: Forecast Performance*
Term Bullwhip effect	**Term** Collaborative planning, forecasting, and replenishment (CPFR)
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A standard set to monitor sales data for individual items in forecasting models. Usually set to be tripped when the demand for a period differs from the forecast by more than some number of mean absolute deviations.	The average of the absolute values of the deviations of observed values from some expected value. [This] can be calculated based on observations and the arithmetic mean of those observations. An alternative is to calculate absolute deviations of actual sales data minus forecast data. This data can be averaged in the usual arithmetic way or with exponential smoothing. See: forecast error, tracking signal.
A measurement of dispersion of data or of a variable. [It] 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.	The ratio of the cumulative algebraic sum of the deviations between the forecasts and the actual values to the mean absolute deviation. Used to signal when the validity of the forecasting model might be in doubt. See: forecast error, mean absolute deviation.
A system that allows the user to simulate the effectiveness of numerous forecasting techniques, enabling selection of the most effective one.	The process of making, checking, correcting, and using forecasts. It also includes determination of the forecast horizon.
1) A collaboration process whereby supply chain trading partners can jointly plan key supply chain activities from production and delivery of raw materials to production and delivery of final products to end customers. Collaboration encompasses business planning, sales forecasting, and all operations required to replenish raw materials and finished goods. 2) A process philosophy for facilitating collaborative communications. [It] is considered a standard, and is endorsed by the Voluntary Interindustry Commerce Standards. Syn: collaborative planning.	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. [This] can be eliminated by synchronizing the supply chain.