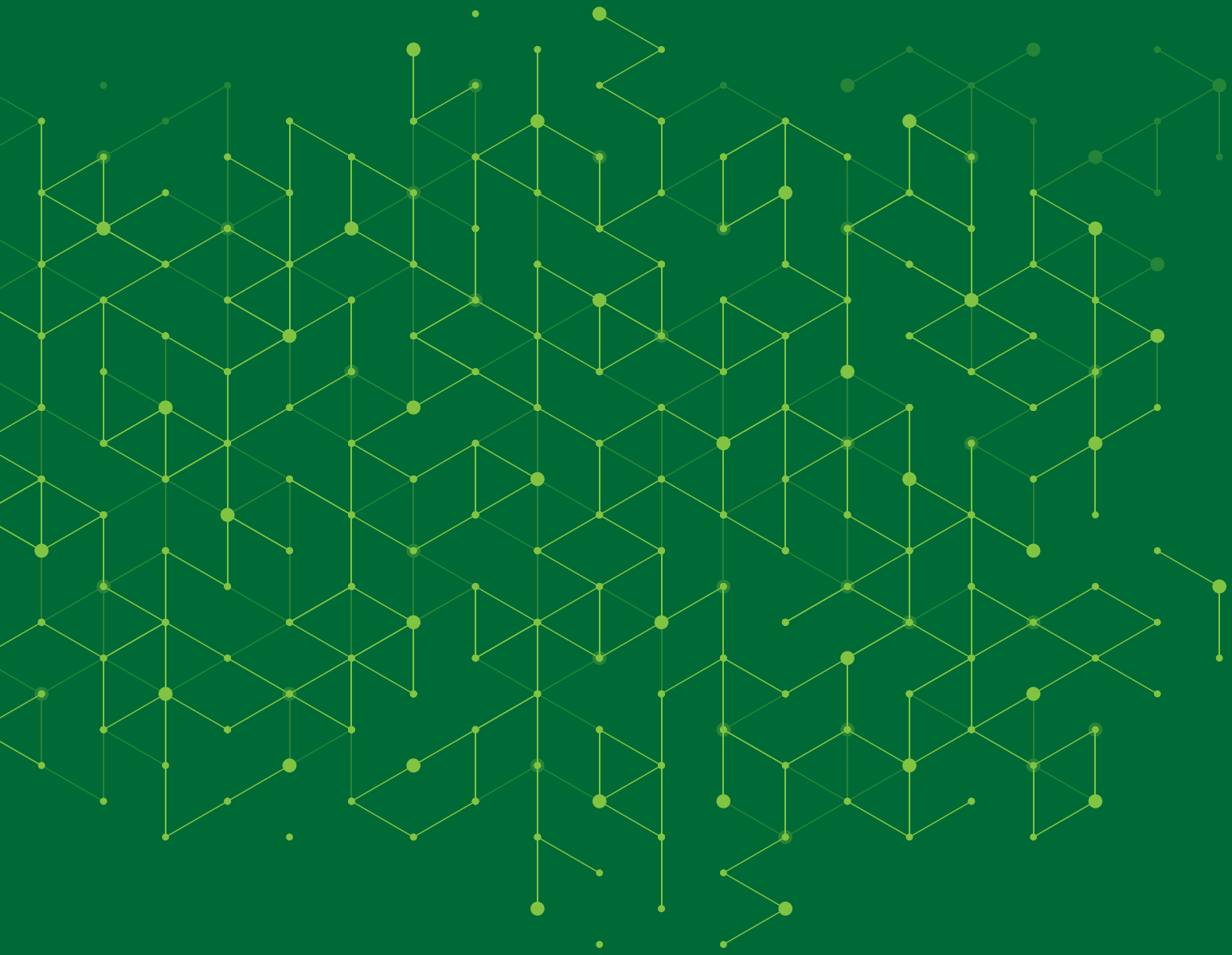
ASCM SUPPLY CHAIN DICTIONARY

NINETEENTH EDITION



ASSOCIATION FOR SUPPLY CHAIN MANAGEMENT

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NINETEENTH EDITION

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Foreword

The Association for Supply Chain Management (ASCM) is the global leader in supply chain organizational transformation, innovation, and leadership. As the largest non-profit association for supply chain management, ASCM is an unbiased partner, connecting companies around the world to the newest thought leadership about all aspects of supply chain. ASCM is built on the foundation of APICS certification and training that spans more than 65 years. As a reference to the supply chain management field for more than 60 years, the ASCM Supply Chain Dictionary (formerly the APICS Dictionary) continues to be an essential reference for the supply chain profession and APICS certifications, certificates, standards, educational programs, and training materials with this 19th edition.

As ASCM continues to grow and provide more services and products to the supply chain profession, our end-to-end supply chain body of knowledge continues to grow and evolve. This edition of the ASCM Supply Chain Dictionary reflects this growth and evolution with the inclusion of terms from ASCM certificates in supply chain warehousing, technology, and resilience. Furthermore, terms were added and updated to reflect the evolving Supply Chain Operations Reference Digital Standard (SCOR DS) and other APICS professional credentials, namely APICS Certified in Planning and Inventory Management (CPIM); APICS Certified Supply Chain Professional (CSCP); APICS Certified in Logistics, Transportation and Distribution (CLTD); and APICS Certified in Transformation for Supply Chain (CTSC).

In this 19th edition of the ASCM Supply Chain Dictionary, we focused on achieving several objectives. Specifically, we wanted to:

1. Initiate a thorough review and revision of the existing terminology, assessing more than 65 percent of the pre-existing terminology for continued industry relevance, appropriateness, and use.
2. Align definitions and integrate additional terminology from SCOR DS.
3. Remain current with the field by updating and revising terms used for the CPIM, CSCP, CLTD, and CTSC designations.
4. Update ISO terms to reflect updates to the standards themselves.
5. Ensure the integrity of any changes to the dictionary by working with subject-matter experts in each area to resolve any differences in shared terms among the certifications, standards, and educational programs.
6. Improve definitions for consistent translation across multiple languages as the scope of the dictionary's use becomes more international.
7. Incorporate suggested inclusions and modifications submitted from our members.
8. Rationalize redundant terms and add cross-references to related terms to increase clarity for readers.
9. Improve the overall quality of the definitions by correcting errors, grammar, and punctuation.

All of these objectives could not have been achieved without substantial assistance from the editorial staff at ASCM and many subject-matter experts. Here is how our team met these objectives to create the 19th edition of the ASCM Supply Chain Dictionary:

With every edition of the dictionary, certification committee representatives provide suggestions for changes and additions to support the examinations. These committee members are familiar with the need to have their terms validated using two or more references and written clearly for our readers to understand. These changes are ongoing and coincide with every exam revision as well as ongoing job task analyses performed for each respective certification program. As a primary reference for every certification exam, the input these subject-matter experts provide assures the dictionary is current and aligned with the exam content manual for each examination.

All new terms and definitions, along with proposed modifications of existing definitions, were vetted through the editors and subject-matter experts from other certification committees for shared terms. This iterative process required the patience of many volunteers working diligently to assure accuracy and quality.

As an important international reference, the ASCM Supply Chain Dictionary continues to be translated into different languages. During the process of translation, definitions are improved through clarification for more universal understanding. With the diversity of input from our international volunteers working on the translations, definitions with context to a specific country are revealed and can be changed for more international understanding. These improvements benefit all our members and professionals worldwide.

With every new edition, there is an opportunity for ASCM members worldwide to recommend changes and additions. Every suggestion is carefully reviewed and incorporated following the same process and standards for inclusion. There were many thoughtful recommendations that were incorporated into this edition. The effort spent carefully writing and tying each recommendation to references enhances the likelihood those recommendations are included.

Finally, the overall goal with each edition is to improve quality. While bigger is not necessarily better, it is expected that as a field evolves, its lexicon will evolve with it.

Acknowledgements

The editors would specifically like to thank the following staff and volunteers for their careful review of the ASCM Supply Chain Dictionary, 19th edition:

Kelsey Makkay, director of product development for ASCM, has been a wonderful dictionary project team leader and a pleasure to have on our team. She was essential to our success, assuring all communication and content sharing among the editors, ASCM staff, ASCM members, and volunteer committees were handled in the most professional and timely manner. This effort was particularly notable with the large number of term additions and revisions for this 19th edition.

Jennifer Storelli, freelance copy editor, offered her meticulous review of dictionary updates to ensure correct grammar, punctuation, consistency, and overall quality.

Multiple dictionary representatives from the various certification committees graciously lent their time and expertise to suggest and review updates. We are grateful for the efforts of the following volunteers: Gilles Bertrand, CPIM, CSCP, CTSC; Steve Bratsch, CPIM, CSCP; Don Chen, CSCP; Felix Haslimeier, CPIM, CSCP, CLTD, CTSC, SCOR-P; Salima Hemani, SEA, CSCP, CTSC; John McErlean, CPIM, CSCP; Jim Winger, CPIM-F, CSCP, CLTD, CTSC, SCOR-P, CTL; and Thorsten Zedel, CPIM.

ASCM is committed to keeping the ASCM Supply Chain Dictionary current and relevant by reflecting today's industry landscape and the evolving needs of the supply chain community.

Please help us in this mission by submitting new terms or providing feedback.

100 percent inspection–The act of inspecting or testing every item in an incoming or outgoing lot.

14 Points–W. Edwards Deming's 14 management practices to help companies increase their quality and productivity: (1) create constancy of purpose for improving products and services; (2) adopt the new philosophy; (3) cease dependence on inspection to achieve quality; (4) end the practice of awarding business on price alone and instead minimize total cost by working with a single supplier; (5) improve constantly and forever every process for planning, production, and service; (6) institute training on the job; (7) adopt and institute leadership; (8) drive out fear; (9) break down barriers between staff areas; (10) eliminate slogans, exhortations, and targets for the workforce; (11) eliminate numerical quotas for the workforce and numerical goals for management; (12) remove barriers that rob people of pride of workmanship and eliminate the annual rating or merit system; (13) institute a vigorous program of education and self-improvement for everyone; and (14) put everybody in the company to work to accomplish the transformation. Syn.: Deming's 14 Points.

3D printing–The capability of constructing three-dimensional objects through the use of a digital model. See: additive manufacturing, rapid prototyping.

3PL–Acronym for third-party logistics.

3-way match–The practice of comparing the information on purchase orders, receipts, and invoices to ensure that the correct items were received and invoiced before approving payment.

4 Es–Abbreviation for Four Es of Leadership.

4D printing–The creation of objects with smart materials, that when exposed to heat, light, or water autonomously change their form.

4PL–Acronym for fourth-party logistics.

5S–Five terms beginning with the letter S used to create a workplace suitable for lean production: sort, set in order (or simplify), shine (or scrub), standardize, and sustain. Sort means to separate needed items from unneeded ones and remove the latter. Set in order means to neatly arrange items for use. Shine means to clean up the work area. Standardize means to sort, simplify, and scrub daily. Sustain means to always follow the first four Ss. These practices are sometimes referred to by their Japanese equivalents: seiri, seiton, seiso, seiketsu, and shitsuke.

80-20 rule–A term referring to the Pareto principle. The principle suggests that most effects come from relatively few causes; that is, 80 percent of the effects (or sales or costs) come from 20 percent of the possible causes (or items). See: ABC classification, category management, Pareto analysis, Pareto's law.

A

A3 problem-solving–A structured method for documenting a process or problem, gathering data, identifying root causes, and developing solutions.

ABB–Acronym for activity-based budgeting.

ABC–Acronym for activity-based costing.

ABC analysis–Syn.: ABC classification.

ABC classification–The classification of a group of items in decreasing order of annual dollar volume (price multiplied by projected volume) or other criteria. This array is then split into three classes, called A, B, and C. The A group usually represents 10 percent to 20 percent by number of items and 50 percent to 70 percent by projected dollar volume. The next grouping, B, usually represents about 20 percent of the items and about 20 percent of the dollar volume. The C class contains about 50 percent of the items and represents about 10 percent to 30 percent of the dollar volume. The ABC principle states that effort and money can be saved through applying looser controls to the low-dollar-volume class items than to the high-dollar-volume class items. The ABC principle is applicable to inventories, purchasing, and sales. Syns.: ABC analysis, distribution by value. See: 80-20 rule, classification, Pareto analysis, Pareto's law.

ABC frequency of access–A warehouse location that is determined by both a product's ABC classification and by the frequency with which it is removed or replaced.

ABC inventory control–An inventory control approach based on ABC classification.

ABM–Acronym for activity-based management.

abnormal demand–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.

ABP–Acronym for activity-based planning.

absentee rate–A ratio comparing the number of employee-days lost with the total number of available employee-days of employment during some base period, usually one month.

absolute error–The absolute value of the forecast error for a period. This measure ignores whether the error is positive or negative and focuses only on its magnitude. See: mean absolute deviation (MAD), mean absolute percent error (MAPE).

absolute forecast error–The absolute value of the forecast error for a time period.

absorption costing–An approach to inventory valuation in which variable costs and a portion of fixed costs are assigned to each unit of production. The fixed costs are usually allocated to units of output on the basis of direct labor hours, machine hours, or material costs. Syn.: allocation costing. See: activity-based cost accounting, activity-based costing (ABC).

accelerated depreciation–A depreciation method involving large write-offs in the early years of an asset's life and smaller write-offs later. This method reduces the value of an asset faster than straight-line depreciation.

accept–To take receipt of an item and affirm that it is complete and sound.

acceptable outgoing quality level–The demarcation between the level of defects in a lot at which the lot will be accepted or rejected.

acceptable quality level (AQL)–The maximum allowable number of defects deemed statistically acceptable for the purposes of sampling inspection. See: acceptance sampling.

acceptable sampling plan–A specific plan that indicates the sampling sizes and the associated acceptance or nonacceptance criteria to be used.

acceptance criteria–Those performance requirements and conditions that must be reached before projects or products are accepted.

acceptance number–1) A number used in acceptance sampling as a cutoff at which the lot will be accepted or rejected. For example, if X or more units are bad within the sample, the lot will be rejected. 2) The value of the test statistic that divides all possible values into acceptance and rejection regions.

acceptance plan–How an organization determines which product lots to accept or reject based on samples. See: acceptance sampling.

acceptance sampling–1) The process of sampling a portion of goods for inspection rather than examining the entire lot. The entire lot may be accepted or rejected based on the sample even though the specific units in the lot are better or worse than the sample. There are two types of acceptance sampling: attributes sampling and variables sampling. See: acceptable quality level (AQL), attribute inspection, attribute sampling. 2) A method of measuring random samples of lots or batches of products against predetermined standards.

accessibility–1) In transportation, the ease with which a carrier provides service from one point to another. 2) In warehousing, the ability to get to and within the point of storage easily.

accessorial charges–A bill for services, such as inside deliveries, that are made in addition to transportation charges.

accessory–A choice or feature added to the good or service offered to the customer to customize the end product. An accessory enhances the capabilities of the product but is not necessary for the basic function of the product. In many companies, an accessory means that the choice does not have to be specified before shipment but can be added at a later date. In other companies, this choice must be made before shipment. See: feature.

accident prevention–The application of basic scientific and technical principles—including education and training—to detect, analyze, and minimize hazards with the objective of avoiding accidents.

acclimatization–The physiological, emotional, and behavioral adjustments to changes in the environment. Proper performance depends on adequate acclimatization to the workplace, including significant mechanical features such as seat height and lighting. Heat, cold, humidity, and light are important physiologically.

account manager–A manager who has direct responsibility for a customer's interests.

accountability–Being answerable for, but not necessarily personally charged with, doing the work. Accountability cannot be delegated, but it can be shared.

accounts payable (AP)–The value of goods and services acquired for which payment has not yet been made.

accounts receivable (AR)–The value of goods shipped or services rendered to a customer for which payment has not yet been received. This usually includes an allowance for bad debts.

accreditation–Certification by a recognized body of the facilities, capability, objectivity, competence, and integrity of an agency, service, operational group, or individual to provide the specific service or operation needed. For example, the Registrar Accreditation Board accredits those organizations that register companies to the ISO 9000:2015 Series Standards.

Accredited Standards Committee (ASC)–An organization that provides standard communication protocols for electronic data interchange (EDI).

accumulation bin–A place, usually a physical location, used to accumulate all components that go into an assembly before the assembly is sent out to the assembly floor. Syn.: assembly bin.

accuracy–The degree of freedom from error or the degree of conformity to a standard. Accuracy is different from precision. For example, four-significant-digit numbers are less precise than six-significant-digit numbers; however, a properly computed four-significant-digit number might be more accurate than an improperly computed six-significant-digit number.

acid test–Syn.: quick asset ratio.

acid test ratio–Syn.: quick asset ratio.

acquisition cost–The cost required to obtain one or more units of an item. This is computed as order quantity times unit cost. See: ordering cost.

action message–An output of a system that identifies the need for, and the type of action to be taken to correct, a current or potential problem. Examples of action messages in a material requirements planning (MRP) system include release order, reschedule in, reschedule out, and cancel. See: exception message, action report.

action plan–A process to obtain results identified by one or more objectives.

action report–A list of the action messages generated by material requirements planning (MRP). See: action message, exception message.

activation–Putting a resource to work.

active inventory–The raw materials, work in process (WIP), and finished goods that will be used or sold within a given period.

active tag–A radio frequency identification (RFID) tag that broadcasts information and contains its own power source. See: radio frequency identification (RFID).

activity–1) In activity-based cost accounting, a task or activity, performed by or at a resource, required for the organization's goods and services. A resource may be a person, machine, or facility. Activities are grouped into pools by type of activity and allocated to products. 2) In project management, an element of work on a project. It usually has an anticipated duration, anticipated cost, and expected resource requirements. Sometimes the term "major activity" is used for larger bodies of work.

activity analysis–In project management, the identification and description of activities within an organization for the purpose of activity-based costing (ABC).

activity code–In project management, a code or value that identifies an activity and allows for filtering or ordering of activities in reports.

activity dictionary–In activity-based cost accounting, a set of standard definitions of activities including descriptions, business processes, function sources, cost drivers, and other data.

activity driver–In activity-based cost accounting, a yardstick of demands placed on an activity by given cost objects. Its purpose is to assign activity costs to cost objects.

activity duration–The planned difference between the start and finish dates of a project activity.

activity list–A record of planned activities in a project, including an activity description and an activity identifier.

activity network diagram–One of the seven new tools of quality (N7). This diagram includes nodes that represent operations to be performed and arrows that represent precedence relationships. It represents all of the activities to be finished to complete a project. An activity network diagram is also known as a critical path diagram or a program evaluation and review technique chart.

activity ratio–A financial ratio to determine how an organization's resources perform relative to the revenue the resources produce. Activity ratios include inventory turnover, receivables conversion period, fixed-asset turnover, and return on assets.

activity sequencing–The process of defining and documenting dependencies among project activities.

activity-based budgeting (ABB)–In activity-based cost accounting, a budgeting process that employs knowledge of activities and driver relationships to predict workload and resource requirements in developing a business plan. Budgets show the predicted consumption and cost of resources using forecasted workload as a basis. The company can use performance to budget to evaluate success in setting and pursuing strategic goals. ABB is part of the activity-based planning process.

activity-based cost accounting–A cost accounting system that accumulates costs based on actual activities performed that consume resources and then uses cost drivers to allocate these costs to products or other bases such as customers, markets, or projects. It attempts to allocate overhead costs on a more realistic basis than by only using direct labor or machine hours. See: absorption costing, activity-based costing (ABC).

activity-based costing (ABC)–A cost accounting system that accumulates costs based on the activities performed on products or services that consume resources and then uses cost drivers to allocate these costs to products or other bases such as customers, markets, or projects. It attempts to allocate overhead costs on a more realistic basis than by using direct labor or machine hours. See: absorption costing, activity-based cost accounting.

activity-based management (ABM)–The use of activity-based costing (ABC) information about cost pools and drivers, activity analysis, and business processes to identify business strategies; improve product design, manufacturing, and distribution; and remove waste from operations. See: activity-based cost accounting.

activity-based planning (ABP)–In activity-based cost accounting, a continuing definition of activity and resource requirements (for both financial and operational systems) based on future demand for products or services by specific customer needs. Demand for resources is related to resource availability; capacity overages and shortfalls are corrected. Activity-based budgeting is derived from the outputs of ABP.

activity-on-arc network–Syn.: activity-on-arrow network (AOA).

activity-on-arrow network (AOA)–A project management network diagram in which the passage of time, via activities, takes place on the arrows. The start of an activity is represented by the tail of the arrow, and the completion of the activity is represented by the tip of the arrow. The sequence of the arrows represents the sequence of activities. Arrows are connected by nodes, which are usually circles on the diagram. Syns.: activity-on-arc network, arrow diagram method. See: network diagram.

activity-on-node network (AON)–A project management network diagram in which the passage of time, via activities, takes place on circles called nodes. Each node contains a number representing the estimated duration of the activity it represents. Nodes are connected by arrows that show precedence relationships. See: network diagram.

actual cost–The labor, material, and associated overhead costs that are charged against a job as it moves through the production process.

actual cost of work performed (ACWP)–The direct costs actually incurred in, and the indirect costs applied to, accomplishing work performed within a given time period. These costs should reconcile with the contractor's incurred-cost ledgers, which are regularly audited by the client.

actual cost system–A cost system that collects costs historically as they are applied to production and allocates indirect costs to products based on the specific costs and achieved volume of the products.

actual demand–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.

actual duration–The difference between the actual start date of a project activity and the current date (if the activity is still in progress) or the difference between the actual start date of a project activity and the actual completion date (if the activity is completed).

actual finish date–In project management, the date on which an activity in a project was actually completed.

actual start date–In project management, the date on which an activity in a project was actually started.

actual volume–Actual output expressed as a volume of capacity. It is used in the calculation of variances when compared with demonstrated capacity (practical capacity) or budgeted capacity.

ACWP–Acronym for actual cost of work performed.

adaptive control–1) The ability of a control system to change its own parameters in response to a measured change in operating conditions. 2) Machine control units in which feeds and/or speeds are not fixed. The control unit, working from feedback sensors, is able to optimize favorable situations by automatically increasing or decreasing the machining parameters. This process ensures optimum tool life, surface finish, machining costs and/or production rates.

adaptive logistics–A logistics strategy that utilizes the capabilities of service providers and technology to provide the agility to scale and reconfigure the logistics network as needed to meet current market conditions, such as disruptions, increased demand, or new regulations.

adaptive network response–The practice of designing and deploying a flexible network of fulfillment points that can dynamically scale capacity on short notice. This ability enables improved demand fulfillment while reducing start-up costs and increasing supply network resilience.

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

adaptive website–A website that records a visitor's behavior, uses artificial intelligence (AI) software to "learn" this behavior, and chooses what to present to the visitor based on this learning.

additive manufacturing–A type of manufacturing that creates objects from a computer model, building layer by layer, to form a desired shape. 3D printing is a type of additive manufacturing. See: 3D printing.

additives–A special class of ingredients characterized either by being used in minimal quantities or by being introduced into the processing cycle after the initial stage.

adjustable capacity–Capacity, such as labor or tools, that can be changed in the short term.

ADU–Acronym for average daily usage.

advance material request–Ordering materials before the release of the formal product design. This early release is typically required because of long lead times.

advanced analytics–The process of using data analysis techniques and tools to gain insights, make predictions, and guide forward-looking decision-making. Advanced analytics techniques include data and text mining, pattern matching, semantic analysis, sentiment analysis, graph analysis, multivariate statistics, visualization, forecasting, machine learning (ML), simulation predictive modeling, and artificial intelligence (AI).

advanced data visualization and visibility–The presentation of complex data using graphs or other images to help people understand what the data reveals.

advanced manifest rule (AMR)–A requirement of all goods coming through U.S. Customs, inbound or outbound, to provide a shipping manifest at least 24 hours prior to loading of the vessel.

advanced planning and scheduling (APS)–Techniques that deal with the analysis and planning of logistics and manufacturing during short, intermediate, and long-term time periods. APS describes any application that uses advanced mathematical algorithms or logic to perform optimization or simulation on finite capacity scheduling, sourcing, capital planning, resource planning, forecasting, demand management, etc. These techniques simultaneously consider a range of constraints and business rules to provide real-time planning and scheduling, decision support, available-to-promise (ATP), and capable-to-promise (CTP) capabilities. APS often generates and evaluates multiple scenarios. Management then selects one scenario to use as the "official plan." The five main components of APS systems are (1) demand planning, (2) production planning, (3) production scheduling, (4) distribution planning, and (5) transportation planning.

advanced shipping notice (ASN)–A notification sent by the shipper to the purchasing organization prior to the shipment leaving the facility, which provides the receiver sufficient time to prepare for delivery of the shipment. The ASN is often sent via electronic data interchange (EDI) and includes all relevant shipment details such as item descriptions, quantities, and tracking information.

aesthetics–A dimension of product quality that intends to appeal to the senses.

affinity diagram–A total quality management (TQM) tool for categorizing and diagraming ideas generated through brainstorming sessions. See: seven new tools of quality (N7).

affirmative action–A hiring policy that requires employers to analyze the workforce for underrepresentation of protected classes. It involves recruiting minorities and members of protected classes, changing management attitudes or prejudices toward them, removing discriminatory employment practices, and giving preferential treatment to protected classes.

A-frame automated picking–An automated system designed to pick and process high-volume orders.

aftermarket–A secondary market for parts and accessories used to repair or enhance an item.

after-sales service–Syn.: field service. See: connected field service.

agency tariff–Rates for a variety of carriers published in a single document.

agent–One who acts on behalf of another (the principal) in dealing with a third party. Examples include a sales agent and a purchasing agent.

aggregate demand–Demand that is grouped (e.g., all sedans) for making forecasts or plans. See: aggregate forecast.

aggregate forecast–An estimate of sales, often time-phased, for a grouping of products or product families produced by a facility or firm. Stated in terms of units, dollars, or both, the aggregate forecast is used for sales and production planning (or for sales and operations planning (S&OP)) purposes. See: aggregate demand, product group forecast.

aggregate inventory–The inventory for any grouping of items or products involving multiple stock keeping units (SKUs). See: base inventory level.

aggregate inventory management–Establishing the overall level (dollar value) of inventory desired and implementing controls to achieve this goal.

aggregate lead time–Syn.: cumulative lead time.

aggregate plan–A plan that includes budgeted levels of finished goods, inventory, production backlogs, and changes in the workforce to support the production strategy. Aggregated information (e.g., product line, family) rather than individual product information is used.

aggregate planning–A process to develop tactical plans to support the organization's business plan. Aggregate planning usually includes the development, analysis, and maintenance of plans for total sales, total production, targeted inventory, and targeted customer backlog for families of products. The production plan is the result of the aggregate planning process. Two approaches to aggregate planning exist: (1) production planning and (2) sales and operations planning. See: production planning, sales and operations planning (S&OP), sales plan.

aggregate production plan–A long-range plan that is used to determine timing and quantity of total future production for a family of products. Syn.: long-term production plan.

aggregate reporting–1) Reporting of process hours in general, allowing the system to assign the actual hours to specific products run during the period based on standards. 2) Also known as gang reporting or the reporting of total labor hours.

aggregate unit of capacity–Combined capacity unit of measure when a variety of outputs exists.

aggregation–The pooling of multiple products to reduce variation. For example, the relative variance in sales of all models of automobiles sold by a firm is less than the variance for individual models. See: risk pooling.

AGI–Acronym for artificial general intelligence.

agile manufacturing–A manufacturing methodology that allows an organization to be flexible and respond rapidly to customer demand and market changes. See: agile supply chain.

agile project management–A project management methodology often employed in environments where the output of the project is the result of a process or a series of subprojects. An agile project follows a more iterative path to completion than a traditional project. The agile project management methodology is most commonly used in software development.

agile supply chain–A supply chain that has the ability to respond quickly to sudden or unpredictable changes in customer demand, supply availability, or the marketplace. See: agile manufacturing.

agility–The ability to adapt and respond to changes in the business environment. It is a Supply Chain Operations Reference (SCOR) customer-focused performance attribute that describes the ability to respond to unplanned external influences, disruptions, and events. Supply chain agility in the SCOR digital standard includes agility in the areas of orders, sourcing, transforming, fulfilling, and returning.

AGV–Acronym for automated guided vehicle.

AGVS–Acronym for automated guided vehicle system.

AI–Acronym for artificial intelligence.

AIDC–Acronym for automatic identification and data capture.

air pollutant emissions–Emissions into the air of harmful pollutants, such as ammonia, carbon dioxide, and carbon monoxide.

air waybill (AWB)–A contract between a shipper and carrier for air freight transportation. The document includes a list of goods, shipping instructions, the shipper and recipient, the point of origin, and the destination. See: bill of lading (B/L), waybill.

AIS–Acronym for automatic identification system.

algorithm–A prescribed set of well-defined rules or processes for solving a problem in a finite number of steps (e.g., the full statement of the arithmetic procedure for calculating the reorder point (ROP)).

allocated item–In a material requirements planning (MRP) system, an item that has been allocated to a customer or manufacturing order but that has not yet been shipped or consumed.

allocated material–Material on hand or on order that is assigned to specific future production or customer orders. Syn.: assigned material, reserved material.

allocation–1) The classification of resources or item quantities that have been assigned to specific customer or manufacturing orders but have not yet been shipped to the customer or released from the stockroom to production. 2) A process used to distribute material in short supply. Syn.: assignment. See: reservation.

allocation costing–Syn.: absorption costing.

allocative efficiency–The use of resources to produce and distribute those goods and services most wanted by consumers.

allowable cost–A reasonable cost specifically permitted under a contract or by a government agency, such as the Federal Acquisition Regulation (FAR) requirements.

allowance–1) In work measurement, a time value or percentage of time by which the normal time is increased, or the amount of nonproductive time applied, to compensate for justifiable causes or policy requirements. This usually includes irregular elements, incentive opportunities on machine-controlled time, minor unavoidable delays, rest time to overcome fatigue, and time for personal needs. 2) In assembly, the minimum clearance or maximum interference distance between two adjacent objects. 3) The dimension limit of an object.

allowed time–A normal time value increased by appropriate allowances.

alpha factor–Syn.: smoothing constant.

alpha release–An extremely early version of a product released, sometimes before completion, to obtain feedback about its suitability. See: beta release.

alternate feedstock–A backup supply of an item that either acts as a substitute or is used with alternate equipment.

alternate operation–Replacement for a normal step in the manufacturing process. Ant.: primary operation.

alternate part–Parts or materials that can be used as substitutes for other specific parts or materials.

alternate routing–A routing that is usually less preferred than the primary routing but results in the production of an identical item. Alternate routings may be maintained in the database or offline via manual methods.

alternate work center–The work center where an operation is not normally performed but can be used when necessary because of capacity constraints, breakdowns, etc. Ant.: primary work center.

American National Standards Institute (ANSI)–The parent organization of the interindustry electronic interchange of the business transaction standard. This group is the clearinghouse on U.S. electronic data interchange standards.

American Society for Quality (ASQ)–A not-for-profit global organization founded in 1946 for individuals and organizations who are interested in quality improvement and operational excellence.

American Standard Code for Information Interchange (ASCII)–Standard seven-bit character code used by computer manufacturers to represent 128 characters for information interchange among data-processing systems, communications systems, and other information system equipment. An eighth bit is added as a parity bit to check a string of ASCII characters for correct transmission.

amortization–The process of recovering (via expensing) a capital investment over a period of time. See: capital recovery.

AMR–Acronym for advanced manifest rule.

analog–As applied to an electrical or computer system, the capability of representing data in continuously varying physical phenomena (as in a voltmeter) and converting it into numbers.

analysis of variance (ANOVA)–A statistical analysis system that estimates what portion of variation in a dependent variable is caused by variation in one or more independent variables. It also produces a number used to infer whether any or all of the independent-dependent variable relationships have statistical significance (i.e., have not been caused by randomness in the data).

analytic workplace design–A design based on established biomechanical and behavioral concepts, including the known operating characteristics of people. This produces a workplace situation well within the range of human capacity and does not generally require modification, improvement, or preliminary experimental mock-up.

analytics–The review of typically large sets of business data using mathematics, statistics, and computer software to identify meaningful patterns in the data to help in decision-making.

analyze phase–One of the six sigma phases of quality. It consists of the following steps: (1) define the performance objective, (2) identify independent variables, and (3) analyze sources of variability.

andon–A sign board with signal lights used to make workers and management aware of a quality, quantity, or process problem.

annual inventory count–Syn.: physical inventory.

annual percentage rate–In finance, the rate of interest paid for a loan after compounding is considered. Syn.: effective interest rate.

annual physical inventory–Syn.: physical inventory.

annualized contract–A negotiated agreement with a supplier for one year that sets pricing, helps ensure a continuous supply of material, and provides the supplier with estimated future requirements.

annuity–A stream of fixed payments for a stipulated time—yearly or at other intervals.

ANOVA–Acronym for analysis of variance.

ANSI–Acronym for American National Standards Institute.

ANSI Z.10–A voluntary consensus standard for occupational health and safety management systems. It uses recognized management system principles in order to be compatible with quality and environmental management system standards such as the ISO 9000:2015 and ISO 14000 family of standards.

anti-boycott regulations–Laws that prevent customers or companies from withholding their patronage or restrict trade practices in a boycott of one nation against another.

anti-bribery regulations–Country regulations that penalize organizations that engage in bribery. The Organisation for Economic Co-operation and Development Anti-Bribery Convention requires countries to develop such regulations.

anticipation inventories–Additional inventory above basic stocking levels to cover projected trends of increasing sales, planned sales promotion programs, seasonal fluctuations, plant shutdowns, and vacations.

anticipation order–An order placed before an item has been made available for delivery.

anti-dumping duty–An imposed tariff when a company sells imported goods at prices below what is charged in its domestic market.

any-quantity rate–A pricing model in which the same rate is charged for shipping any quantity of goods.

AOA–Acronym for activity-on-arrow network.

AON–Acronym for activity-on-node network.

AOQ–Acronym for average outgoing quality.

AOQL–Acronym for average outgoing quality limit.

AP–Acronym for accounts payable.

API–Acronym for application programming interface.

APICS–Founded in 1958, APICS began as the American Production and Inventory Control Society, playing a crucial role in developing and disseminating knowledge about production planning and inventory management. APICS's suite of certifications is highly regarded and sought after by industry professionals and corporations worldwide. In 2018, APICS, the organization, became the Association for Supply Chain Management (ASCM); however, the APICS certifications remain a product brand of ASCM. Specifically, ASCM provides the following four APICS certifications: Certified in Planning and Inventory Management (CPIM); Certified Supply Chain Professional (CSCP); Certified in Logistics, Transportation and Distribution (CLTD); and Certified in Transformation for Supply Chain (CTSC).

apparent authority–Authority perceived by a third party to flow from a principal to an ostensible agent though no legal relationship exists.

appellant–One who appeals a court decision to higher authority.

application programming interface (API)–A set of rules and protocols that defines how to communicate with a system or application.

application service provider (ASP)–A firm that provides access to software applications or performs outsourced services for clients.

application software–A computer program or set of programs designed to assist in the performance of processes and job functions, a specific task such as order processing, accounting, or inventory management. See: application system.

application system–A set of software programs that perform specific tasks or functions. Examples are payroll, spreadsheets, and word-processing programs. See: application software.

application-level gateway–A firewall that filters packs of information. This may be referred to as an application-level proxy. See: packet filtering.

application-to-application–The exchange of data between computer systems without reentry of data, such as integrations or interfaces.

appraisal–1) An evaluation of employee performance. 2) In total quality management, the formal evaluation and audit of quality.

appraisal costs–Those costs associated with the formal evaluation and audit of quality in the firm. Typical costs include inspection, quality audits, testing, calibration, and checking time.

approved vendor list (AVL)–The practice of maintaining a list of verified suppliers that have been approved by the procurement department to provide goods and services. This list usually is based on many requirements of suppliers, such as product quality, cost, culture, capacity, and financial stability of the vendor.

APR–Acronym for annual percentage rate.

APS–Acronym for advanced planning and scheduling.

AQL–Acronym for acceptable quality level.

AR–Acronym for accounts receivable.

arbitrage–Risk-free buying of an asset in one market and simultaneous selling of an identical asset at a profit in another market.

arbitration–The process by which an independent third party is brought in to settle a dispute or to preserve the interests of two conflicting parties.

arithmetic mean–Syn.: mean. See: average forecast error.

arm's length transaction–A transaction between two entities that are independent of each other. In supply chain, it refers to ordering from a supplier without having any long-term relationship or agreement.

arrival date–The date purchased material is due to arrive at the receiving site. The arrival date can be input, can be equal to the current due date, or can be calculated from the ship date plus transit time. See: due date.

arrival rate–In queuing theory, the value or distribution describing how often a customer or flow unit arrives for service.

arrow–1) In activity-on-arrow networks (AOAs), the graphic presentation of an activity. The tail of the arrow represents the start of the activity. The head of the arrow represents the finish. Unless a time scale is used, the length of the arrow stem has no relation to the duration of the activity. 2) In activity-on-node networks (AONs), an arrow represents a precedence requirement between activities.

arrow diagram–A technique to determine the relationships and precedence of different activities and the time estimate for project completion.

arrow diagram method–Syn.: activity-on-arrow network (AOA).

artificial general intelligence (AGI)–A type of artificial intelligence (AI) that has the ability to match or exceed the human mind and behavior to solve complex problems.

artificial intelligence (AI)–1) Machines or computer programs that can learn, reason, and take action, similar to humans. 2) An area of computer science that attempts to develop AI computer programs. See: artificial general intelligence (AGI), artificial superintelligence (ASI), expert system.

artificial superintelligence (ASI)–A software-based type of artificial intelligence (AI) that surpasses human ability.

AS/RS–Acronym for automated storage/retrieval system.

ASC–Acronym for Accredited Standards Committee.

ASCII–Acronym for American Standard Code for Information Interchange.

ASCM–Acronym for Association for Supply Chain Management.

ASI–Acronym for artificial superintelligence.

ASN–Acronym for advanced shipping notice.

ASP–Acronym for application service provider.

ASQ–Acronym for American Society for Quality.

ASQC–Acronym for American Society for Quality Control, now simply American Society for Quality (ASQ).

assay–Test of the physical and chemical properties of a sample.

assembler–A person who is responsible for putting together parts or pieces following a set of blueprints or schematics.

assemble-to-order (ATO)–A production environment where a good or service can be assembled after receipt of a customer's order. The key components used in the assembly or finishing process are planned and usually stocked in anticipation of a customer order. Receipt of an order initiates assembly of the customized product from common components into a pre-determined product. This strategy is useful when a large number of end products (based on the selection of options and accessories) can be assembled from common components. ATO is distinct from configure-to-order in that the assembly is standard and is not customized to order. Syn.: finish-to-order (FTO). See: make-to-order (MTO), make-to-stock (MTS), configure-to-order (CTO).

assembly–A group of subassemblies and/or parts that are combined together. An assembly may be an end-item or a component of a higher-level assembly.

assembly bin–Syn.: accumulation bin.

assembly chart–A graphical overview of a product containing assembly and subassembly operations, materials, and components.

assembly lead time–The time that normally elapses between the issuance of a work order to the work completion.

assembly line–An assembly process in which equipment and work centers are laid out to follow the sequence in which raw materials and parts are assembled. See: line, line manufacturing, linear layout, production line.

assembly order–A manufacturing order to an assembly department authorizing it to put components together into an assembly. See: blend order.

assembly parts list–As used in the manufacturing process, a list of all parts (and subassemblies) that make up a particular assembly. See: batch card, manufacturing order.

asset–1) An accounting or financial term (balance sheet classification of accounts) representing the resources owned by a company, whether tangible (cash, inventories) or intangible (patent, goodwill). Assets may have a short-term time horizon—such as cash, accounts receivable (AR), and inventory—or a long-term value—such as equipment, land, and buildings. See: balance sheet, liability, owner's equity. 2) In cybersecurity, the location in the system where an attack is aimed to make the most significant effect or to achieve the specific goal of the attack.

asset future economic benefit–The potential contribution or expected cash flow that the entity expects to generate from an asset.

asset management efficiency–The ability of an organization to efficiently use and generate revenue from its assets. Asset management strategies in a supply chain include inventory reduction and insourcing versus outsourcing. Example metrics include inventory days of supply (DOS) and capacity utilization.

asset recovery–The classification and disposition of surplus, obsolete, scrap, waste, and excess material products and other assets in a way that maximizes returns to the owner while minimizing costs and liabilities associated with the dispositions. This is also referred to as investment recovery.

asset turnover–A financial efficiency ratio that measures how effectively a company uses its assets to generate sales. It is calculated as total sales divided by average total assets.

asset value–The adjusted purchase price of the asset that includes the initial cost plus any costs necessary to prepare the asset for use.

assignable cause–A source of variation in a process that can be isolated and identified, especially when its significantly larger magnitude or different origin readily distinguishes it from random causes of variation. Syn.: special cause, assignable variation. See: common cause.

assignable variation–Variation made by one or more causes that can be identified in order to be removed. Syn.: assignable cause. See: common cause.

assigned material–Syn.: allocated material, reserved material.

assignee–One who receives a legal transfer of rights from another party.

assignment–Syn.: allocation.

assignor–One who transfers rights to another person or entity.

Association for Supply Chain Management (ASCM)–Formed in 2018 as the successor to APICS, the Association for Supply Chain Management (ASCM) is the largest supply chain organization and the global leader in supply chain education, organizational transformation, technological innovation, and thought leadership. ASCM empowers the industry to drive supply chain excellence through its premier educational offerings, cutting-edge research, innovative events, and world-class content.

associative forecasting–The use of one or more variables that are believed to affect demand in order to forecast future demand. See: causal forecast.

assumed receipt–A receiving technique based on the assumption that a shipment is as expected. Receiving personnel do not verify the delivery quantity.

assurance–The ability of employees to inspire trust and confidence. Assurance is one of the dimensions of service quality.

assured source of supply–A guaranteed supply source generally created by a contract.

ASTM International–An organization that develops and publishes international standards for testing materials, products, systems, and services. The voluntary standards are used globally to improve product quality, enhance safety, facilitate market access and trade, and build consumer confidence.

asynchronous process–A condition under which two related processes run independently of each other.

ATA carnet–Syn.: carnet.

ATO–Acronym for assemble-to-order.

ATP–Acronym for available-to-promise.

ATR certificate–A certificate that is required for trade between the European Union and Turkey. It grants zero duty to "free circulating" goods in the EU, which are goods originating in the EU or imported into the EU with all import duties and taxes paid. Agricultural goods, minerals, and steel are excluded and must use form EUR1.

attractability efficiency–A measure of how well an organization's website attracts people to visit the site.

attribute–1) A characteristic of an item or service that specifies either a presence or an absence, such as on time versus late. 2) A quality control value that is either a yes or no value or is counted rather than being measured on a continuous scale. See: variable, attribute inspection.

attribute data–Data in which observations represent qualitative attributes or categories such as region, product family, or vendor. Arithmetic calculations cannot be performed on attribute data. As a result, attribute data is summarized by the frequency of observations that are members of each category. Syn.: categorical data. See: attribute, attribute inspection.

attribute inspection–Inspection to determine if an object's attributes fulfill a specific requirement, often used in acceptance sampling. See: attribute, acceptance sampling.

attribute sampling–A type of acceptance sampling where the presence or absence of a characteristic is noted in each of the units inspected. See: acceptance sampling.

attrition factor–The rate of personnel leaving an organization, either voluntarily or involuntarily.

audit–An objective comparison of actions to policies and plans.

audit trail–Tracing the transactions affecting the contents or origin of a record.

augmented reality (AR)–Using holographic imagery alongside the physical environment to provide additional information or guidance about how to carry out a task. For example, warehouse employees can wear AR-enabled smart glasses to see information about the locations of items as well as instructions about what items and quantities to pick when pulling material to fill an order.

augmented workforce–The ability to enhance productivity, capability, and performance by combining human workers with technology, such as machine learning (ML) or AI, to deliver tasks.

authentication key–In information systems, a key that ensures that data in an electronic business transaction is not changed. It can also be used as a form of digital signature.

authorized deviation–Permission for a supplier or the plant to manufacture an item that is not in conformance with the applicable drawings or specifications.

automated assembly system–A system that produces completed products or assemblies without the contribution of direct labor.

automated clearinghouse–A U.S. nationwide system for electronic payments preferred by a myriad of banks, consumers, and corporations. This system can carry payment information in a standardized, computer-accessible format.

automated data capture (ADC)–The practice of utilizing technology to automatically capture and format various types of production data to support tracking product status and performance measures and improve enterprise resource planning functionality, including order and inventory management and planning and scheduling.

automated flow line–A production line that has machines linked by automated parts transfer and handling machines.

automated fulfillment signals–The ability to automatically transmit demand; supply; and other data signals, such as order placement, fulfillment, and return authorization. This results in improved responsiveness and reduced overhead through leveraging cloud platforms, upstream and downstream triggers, sensors, and other system controls to extend real-time visibility.

automated guided vehicle (AGV)–An unmanned vehicle that moves along a fixed path or uses electronic signals for navigation within a facility.

automated guided vehicle system (AGVS)–A material handling network that automatically routes devices, such as carts or pallet trucks, from one location to another through the use of guided paths or electronic navigation systems.

automated information system–Computer hardware and software configured to automate calculating, computing, sequencing, storing, retrieving, displaying, or communicating, or to otherwise manipulate data and textual material to provide information.

automated ordering system–An inventory ordering system that automatically generates purchase orders for items based on a trigger or set point in the item's master record. The order may occur electronically through e-procurement and normally used with a blanket or contracted agreement or for low-value, high volume items. See: inventory ordering system, continuous replenishment.

automated packing solution–A system that uses conveyors or robotic equipment and advanced algorithms to optimize packaging configurations to improve space utilization in storage and transportation and to reduce the amount of required packing material. These systems increase efficiency of the packaging process, reduce costs, and improve accuracy.

automated process controls system–A system that can measure the performance of a process, compare the result to predetermined standards, and then make adjustments to the process.

automated quality control inspection system–A system that employs machines to help inspect products for quality control.

automated sequential and logic control–A combination system that gives the same result when it is given the same input. The individual steps are processed in a predetermined order, and the progression from one step to the next is dependent on defined conditions being satisfied.

automated storage/retrieval system (AS/RS)–A high-density rack inventory storage system that uses robotics to sort, store, and retrieve items in a warehouse.

automatic identification and data capture (AIDC)–Technologies that collect data about objects and then send the data to a computer without human intervention. Examples include radio frequency wireless devices and terminals, barcode scanners, and smart cards.

automatic identification system (AIS)–A system that can use various means, including barcode scanning and radio frequencies, to sense and load data in a computer.

automatic rescheduling–Rescheduling done by the computer to automatically change due dates on scheduled receipts when it detects that due dates and need dates are out of phase. Ant.: manual rescheduling.

automation–The substitution of machine work for human physical and mental work, or the use of machines for work not otherwise able to be accomplished, entailing a less continuous interaction with humans than previous equipment used for similar tasks.

autonomation–Automated shutdown of a line, process, or machine upon detection of an abnormality or defect.

autonomous delivery–The use of automated vehicles, such as drones or driverless trucks, that travel over the land or through the air to deliver parcels.

autonomous supply chain planning–Continuous learning in the planning models that enable business processes with advanced analytics and artificial intelligence (AI). The planning is based on strategy, balanced scorecard performance, constraint analysis, flow and node design, buffer analysis, planning effectiveness, and market shifts.

autonomous work group–A team that is empowered to work independently to perform a task with little supervision, interference, or help.

auxiliary item–An item required to support the operation of another item.

availability –The percentage of time that a worker or machine is capable of working. The formula is $availability = \frac{(S-B)}{S} \times 100\%$ where S is the scheduled time and B is the downtime.

available capacity–Syn.: capacity available.

available inventory–The on-hand inventory balance minus allocations, reservations, backorders, and (usually) quantities held for quality problems. This is often called beginning available balance. Syns.: beginning available balance, net inventory.

available time–The number of hours a work center can be used, based on management decisions regarding shift structure, extra shifts, regular overtime, observance of weekends and public holidays, shutdowns, and the like. See: capacity available, utilization.

available work–Work that is actually in a department ready to be worked on as opposed to scheduled work that may not yet be physically on hand.

available-to-promise (ATP)–1) In operations, the uncommitted portion of a company's inventory and planned production maintained in the master schedule to support customer-order promising. The ATP quantity is the uncommitted inventory balance in the first period and is normally calculated for each period in which a master production schedule (MPS) receipt is scheduled. In the first period, ATP includes on-hand inventory less customer orders that are due and overdue. Three methods of calculation are used: discrete ATP, cumulative ATP with look-ahead, and cumulative ATP without look-ahead. 2) In logistics, the quantity of a finished good that is or will be available to commit to a customer order based on the customer's required ship date. To accommodate deliveries on future dates, ATP is usually time phased to include anticipated purchases or production receipts. See: cumulative available-to-promise, discrete available-to-promise.

average chart–A control chart in which the subgroup average, X-bar, is used to evaluate the stability of the process level. Syn.: X-bar chart.

average collection period–Syn.: receivables conversion period.

average cost per unit–The estimated total cost, including allocated overhead, to produce a batch of goods divided by the total number of units produced.

average cost system–In cost accounting, a method of inventory valuation for accounting purposes. A weighted average (based on quantity) of item cost is used to determine the cost of goods sold (COGS) (income statement) and inventory valuation (balance sheet). Average cost provides a valuation between last in, first out and first in, first out methods. See: first in, first out (FIFO); last in, first out (LIFO).

average daily usage (ADU)–Average usage of a part, component, or good on a daily basis.

average demand–A method used to forecast demand based on the average demand over a predetermined range of time. See: moving average forecast.

average fixed cost–The total fixed cost divided by units produced. This value declines as output increases.

average forecast error–The arithmetic mean of the forecast errors without making adjustments such as squaring them (as in mean squared error (MSE)) or taking their absolute value (as in mean absolute deviation (MAD)). Forecasts with a small average forecast error exhibit little or no bias because the positive and negative errors offset when computing the average. See: bias, forecast error, arithmetic mean.

average inventory–One-half the average lot size plus the safety stock, when demand and lot sizes are expected to be relatively uniform over time. The average can be calculated as an average of several inventory observations taken over several historical time periods. For example, twelve-month ending inventories may be averaged. When demand and lot sizes are not uniform, the stock level versus time can be graphed to determine the average.

average outgoing quality (AOQ)–The expected average quality level of outgoing product for a given value of incoming product quality.

average outgoing quality limit (AOQL)–The maximum average outgoing quality over all possible levels of incoming quality for a given acceptance sampling plan and disposal specification.

average payment period–The average time between receipt of materials and payment for those materials.

average total cost–The ratio of total costs (the sum of total fixed costs and total variable costs) over units produced.

average variable cost–The ratio of total variable costs over units produced.

AVL–Acronym for approved vendor list.

avoidable cost–A cost associated with an activity that would not be incurred if the activity was not performed (e.g., telephone cost associated with vendor support).

avoidable delay–The delay controlled by a worker and therefore not allowed in the job standard.

awareness efficiency–A measure of how well an organization informs people that their website exists.

AWB–Acronym for air waybill.

B

B/L–Acronym for bill of lading.

B2B–Acronym for business-to-business.

B2C–Acronym for business-to-consumer.

B7–Acronym for the basic seven tools of quality.

BAC–Acronym for budget at completion.

back room–In service operations, the part of the operation that is completed without direct customer contact. Many service operations contain both back-room and front-room operations. See: front room.

back scheduling–A technique for calculating operation start dates and due dates. The schedule is computed starting with the due date for the order and working backward to determine the required start date and/or due dates for each operation. Syn.: backward scheduling. Ant.: forward scheduling.

backflush–A method of inventory bookkeeping where the book (system) inventory of components is automatically reduced by the system after completion of activity on the component's upper-level parent item based on what should have been used as specified on the bill of material (BOM) and allocation records. Syns.: explode-to-deduct, post-deduct inventory transaction processing. See: mixed-mode or reverse-material issue, pre-deduct inventory transaction processing.

backflush costing–The application of costs based on the output of a process. Backflush costing is usually associated with repetitive manufacturing environments.

backhauling–The process of a transportation vehicle returning from the original destination point to the point of origin. The backhaul can be with a full, partial, or empty load. An empty backhaul is called deadheading. See: deadhead.

backlog–All the customer orders received but not yet shipped. This is sometimes referred to as open customer orders or the order board. See: order backlog, past-due order.

backorder–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.

backorder rate–The percentage of orders that cannot be fulfilled by the due date. See: backorder.

backsourcing–Company processes that, previously handled externally, have been reassigned internally.

backup–The procedure of making backup copies of computer data so that it can be restored should a loss occur due to system downtime, malfunction, or cyber attack. See: restore.

backward integration–The process of buying or owning elements of the production cycle and channel of distribution back toward raw material suppliers. See: forward integration, vertical integration.

backward pass–In the critical path method of project planning, working from the finish node backward through the network logic to the start node to determine the various late start dates and late finish dates. See: critical path method (CPM), forward pass.

backward scheduling–Syn.: back scheduling.

bad-debt ratio–In financial management, the percentage of accounts receivable (AR) that is not expected to be recovered.

balance–1) The act of evenly distributing the work elements between two operations. 2) The state of having approximately equal working times among the various operations in a process or the stations on an assembly line. 3) The process of balancing or projecting inventory levels based on supply and demand. See: balance delay, balancing operations, projected available balance (PAB).

balance delay–The idle time of one or more operations in a series caused by uneven workload balancing. See: balance.

balance of trade–A plus or minus amount found by comparing a country's exports of merchandise with its imports.

balance sheet–A financial statement showing the resources owned, the debts owed, and the owner's share of a company at a given point in time. See: funds flow statement, income statement.

balanced scorecard–A list of financial and operational measurements used to evaluate organizational or supply chain performance. The dimensions of the balanced scorecard might include customer perspective, business process perspective, financial perspective, and innovation and learning perspectives. It formally connects overall objectives, strategies, and measurements. Each dimension has goals and measurements.

balance-of-stores record–A double-entry record system that shows the balance of inventory items on hand and the balances of items on order and available for future orders. Where a reserve system of materials control is used, the balance of material on reserve is also shown.

balancing operations–In repetitive production, matching actual output cycle times of all operations to the demand or use for parts as required by final assembly and, eventually, as required by the market. See: balance.

Baldrige Award–Syn.: Malcolm Baldrige National Quality Award (MBNQA).

Baldrige Lite–A state or company quality award program modeled after the Malcolm Baldrige National Quality Award but with a simplified application process.

Baldrige-qualified–A designation claimed by companies that have been granted a site visit by the Malcolm Baldrige National Quality Award examiners.

balking–When customers will not join a queue when they learn how long it is. See: reneging.

bandwidth–A measurement of how much data can be moved along a network per unit of time, usually measured in bits per second.

bar graph–A graphical method of displaying data by grouping observations into specific clusters.

barcode–A series of alternating bars and spaces printed or stamped on parts, containers, labels, or other media, representing encoded information that can be read by electronic readers. A barcode is used to facilitate timely and accurate input of data to a computer system.

barcoding–A method of encoding data using barcodes for fast and accurate readability.

barge–A self-propelled, pushed, or pulled flat-bottomed ship for use in inland waterways. It is frequently used to transport bulk commodities.

barrier to entry–Factors that prevent companies from entering into a particular market, such as high initial investment in equipment.

base demand–The percentage of a company's demand derived from continuing contracts and/or existing customers. Because this demand is well known and recurring, it becomes the basis of management's plans. Syn.: baseload demand.

base index–Syn.: base series.

base inventory level–The inventory level made up of aggregate lot-size inventory plus aggregate safety stock inventory. It does not take into account the anticipation inventory that will result from the production plan. The base inventory level should be known before the production plan is made. Syn.: basic stock. See: aggregate inventory.

base point pricing–A type of geographic pricing policy where customers order from designated shipping points without freight charges if they are located within a specified distance from the base point. Customers outside area boundaries pay base price plus transportation costs from the nearest base point.

base series–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.

base stock system–A method of inventory control that includes most of the systems in practice as special cases. In this system, when an order is received for any item, it is used as a picking ticket, and duplicate copies—called replenishment orders—are sent back to all stages of production to initiate replenishment of stocks. Positive or negative orders—called base stock orders—are also used from time to time to adjust the level of the base stock of each item. In actual practice, replenishment orders are usually accumulated when they are issued and are released at regular intervals.

baseline–1) In project management, the approved time-phased plan for the schedule or cost of a piece of work, including approved changes. 2) A starting point.

baseline forecast–An estimate of future demand based on historical demand with the objective of translating market potential into an accurate representation of market demand with minimal distortion and latency.

baseline inventory monitoring–Regular review of the lowest stock level that a particular stock keeping unit (SKU) reached during the last 12 months.

baseline measures–A set of measurements or metrics that seeks to establish the current or starting level of performance of a process, function, product, firm, or other entity. Baseline measures are usually established before implementing improvement activities and programs.

baseload demand–Syn.: base demand.

basic seven tools of quality (B7)–Tools that help organizations understand their processes in order to improve them. The tools are the cause-and-effect diagram (also known as the fishbone diagram or the Ishikawa diagram), check sheet, flowchart (or stratification), histogram, Pareto chart, control chart, and scatter chart. Syn.: seven tools of quality. See: cause-and-effect diagram, seven new tools of quality (N7).

basic stock–Syn.: base inventory level.

batch–1) A quantity scheduled to be produced or in production. See: process batch, transfer batch. 2) For discrete products, the batch is planned to be the standard batch quantity, but during production, the standard batch quantity may be broken into smaller lots. See: lot. 3) In non-discrete products, the batch is a quantity that is planned to be produced in a given time period based on a formula or recipe that often is developed to produce a given number of end-items. 4) A type of manufacturing process used to produce items with similar designs. It also may cover a wide range of order volumes. Typically, items ordered are of a repeat nature, and production may be for a specific customer order or for stock replenishment. See: project manufacturing.

batch bill of materials (BOM)–A recipe or formula in which the statement of quantity per is based on the standard batch quantity of the parent. Syn.: batch formula.

batch card–A document used in process industries to authorize and control the production of a quantity of material. Batch cards usually contain quantities and lot numbers of ingredients to be used, processing variables, pack-out instructions, and product disposition instructions. See: assembly parts list, batch sheet, blend formula, fabrication order, manufacturing order, mix ticket.

batch formula–Syn.: batch bill of materials (BOM).

batch manufacturing–A type of manufacturing process in which sets of items are moved through the different manufacturing steps in a group or batch.

batch number–Syn.: lot number.

batch picking–A method of picking orders in which order requirements are aggregated by product across orders to reduce movement to and from product locations. The aggregated quantities of each product are then transported to a common area where the individual orders are constructed. See: discrete order picking, order picking, zone picking.

batch processing–1) A manufacturing technique in which parts are accumulated and processed together in a lot. 2) A computer technique in which transactions are accumulated and processed together or in a lot. Syn.: batch production.

batch production–Syn.: batch processing.

batch sensitivity factor–A multiplier that is used for the rounding rules in determining the number of batches required to produce a given amount of product.

batch sheet–In many process industries, a document that combines product and process definition. See: batch card.

batch-size reduction–Using lean principles to reduce the size of manufacturing batches to better match customer demand.

baud–The number of bits transmitted per second.

Bayesian analysis–A statistical analysis in which uncertainty is incorporated, using all available information to choose among a number of alternative decisions.

BCMS–Acronym for business continuity management system.

BCP–Acronym for business continuity planning.

beginning available balance–Syn.: available inventory.

beginning inventory–A statement of on-hand quantities or the dollar value of a stock keeping unit (SKU) at the beginning of a period.

bench stock–Syn.: floor stock.

benchmark measures–A set of measurements or metrics that is used to establish goals for improvements in processes, functions, products, and so on. Benchmark measures are often derived from other firms that display best-in-class achievement.

benchmarking–Comparing products, processes, and services to those of another organization thought to have superior performance. The benchmark target may or may not be a competitor or even in the same industry. There are seven common forms of benchmarking. See: competitive benchmarking, financial benchmarking, functional benchmarking, performance benchmarking, process benchmarking, product benchmarking, strategic benchmarking.

BER–Acronym for beyond economic repair.

bespoke–A custom-made product or service. The term originally applied to clothing but now applies to software as well.

best alternative to a negotiated agreement (BATNA)–The most advantageous option to one party in a negotiation if the talks fail. If an agreement cannot be reached, this is a reasonably attractive alternative to negotiation that can be implemented with minimal disruption.

best practice–1) A method or technique that consistently shows results superior to those achieved through other means. As a result, the method or technique often is used as a benchmark. Best practices can be defined within an organization, within an industry, or across industries. 2) Practices that have had a proven and positive impact on organizational or supply chain performance. They are categorized as follows: current (not emerging), which means not obsolete; structured, or featuring a clearly stated goal, scope, process, and procedure; proven, or demonstrated in a working environment and linked to key metrics; and repeatable, which means it has been proven in multiple organizations and industries.

best-in-class–In the benchmarking process, the designation given to an organization (which may be from another industry) recognized for excellence in a specific process area. See: process benchmarking.

beta distribution–A type of probability distribution often used to model activity times.

beta release–A version of a product sent to certain customers prior to general release in order to receive feedback about product performance. See: alpha release.

beta test–A term used to describe the pilot evaluation of a good or service. This usually follows the alpha release.

beyond economic repair (BER) management–The practice of assessing items as they are removed for maintenance, repair, and overhaul (MRO) to determine whether repairing the items would cost more than buying replacements.

bias–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.

bid–A quotation specifically given to a prospective purchaser upon request, usually in competition with other vendors. See: quotation.

bid evaluation–A comparison of supplier quotes for a product based on price, quality, lead time, delivery performance, and other criteria. Based on that comparison, a supplier is selected.

bid pricing–Offering a specific price for each job rather than setting a standard price that applies for all customers.

bid proposal–The response to a written request from a potential customer asking for the submission of a quotation or proposal to provide goods or services. The bid proposal is in response to a request for proposal (RFP) or request for quote (RFQ).

big data–A data set that cannot be handled by standard data management and analytical tools because it is too large or too complex. See: big data analytics.

big data analytics–The processing and analysis of large and complex amounts of data to discover patterns and trends in order to make informed decisions. See: big data.

big Q, little q–A term used to contrast the difference between managing for quality in all business processes and products (big Q) and managing for quality in a limited capacity—traditionally in only factory products and processes—(little q).

bilateral contract–An agreement wherein each party makes a promise to the other party.

bill of activities–In activity-based cost accounting, a summary of activities performed to produce a product or other cost object. The bill of activities includes the volume and cost of each activity.

bill of capacity–Syn.: bill of resources.

bill of distribution–Syn.: distribution network.

bill of exchange–Syn.: draft.

bill of labor–A structured listing of all labor requirements for the fabrication, assembly, and testing of a parent item. See: bill of resources, capacity bill procedure, routing.

bill of lading (B/L)–A legal document used in transportation to acknowledge receipt of goods by the carrier for shipment. It contains the contractual terms of transportation between the shipper, carrier, and recipient. such as when ownership of the goods transfers to the recipient. It must accompany all goods being transported and be signed by all parties. See: air waybill (AWB), bill of lading (B/L) (house), bill of lading (B/L) (international), bill of lading (B/L) (master), bill of lading (B/L) (uniform), clean bill of lading (B/L).

bill of lading (B/L) (house)–A bill of lading issued by a non-vessel-operating common carrier (NVOCC), consolidator, or freight forwarder. It indicates the carrier's name and lists the master bill of lading. See: bill of lading (B/L), bill of lading (B/L) (master).

bill of lading (B/L) (international)–A bill of lading used in international trade to help ensure exporters are paid and importers receive the promised goods. When they are used for international transport, these include master bills of lading, house bills of lading, intermodal bills of lading, and air waybills. See: bill of lading (B/L).

bill of lading (B/L) (master)–A bill of lading issued by carriers to shippers working directly with carriers or freight forwarders. See: bill of lading (B/L), bill of lading (B/L) (uniform).

bill of lading (B/L) (uniform)–A bill of lading that cannot be transferred but can only be delivered to the recipient named on the bill. See: bill of lading (B/L).

bill of material (BOM)–1) A listing of all the subassemblies, intermediates, parts, and raw materials that go into a parent assembly as well as the quantity of each item required to make an assembly. It is used in conjunction with the master production schedule (MPS) to determine the items for which purchase requisitions and production orders must be released. A variety of display formats exists for BOMs, including the single-level BOM, indented BOM, modular (planning) BOM, transient BOM, matrix BOM, and costed BOM. 2) A list of all the materials needed by a contract manufacturer to make one production run of a product's piece parts or components for its customers. The BOM may also be called the formula, recipe, or ingredients list in certain process industries. See: formula.

bill of material (BOM) consumption–The process of using each bill-of-material (BOM) component during the production process.

bill of operations–Syn.: routing.

bill of resources–A listing of the required capacity and key resources needed to manufacture one unit of a selected item or family. Rough-cut capacity planning (RCCP) uses these bills to calculate the approximate capacity requirements of the master production schedule (MPS). Resource planning may use a form of this bill. Syn.: bill of capacity. See: bill of labor, capacity bill procedure, capacity planning using overall factors (CPOF), product load profile, resource profile, rough-cut capacity planning (RCCP), routing.

bill-back–A penalty imposed on the supplier because a late delivery or poor quality resulted in extra costs.

billing and collection costs–The costs related to issuing invoices or bills. In transportation, these amounts can be reduced by combining shipments in an order to limit transportation frequency.

bill-of-material accuracy–The degree to which a list of specified items conforms to administrative specifications and with correct quantities.

bill-of-material explosion–The process of determining component identities, quantities per assembly, and other parent-component relationship data for a parent item. Explosion may be single level, indented, or summarized.

bin–1) A storage device designed to hold small discrete parts. 2) A shelving unit with physical dividers separating the storage locations.

bin location–A datapoint that identifies the specific physical location, or bin, where inventory is stored.

bin reserve system–Syn.: two-bin inventory system.

bin tag–1) A type of perpetual inventory record designed for store-keeping purposes and maintained at the storage area for each inventory item. 2) An identifying marking on a storage location.

bin transfer–An inventory transaction to move a quantity from one location (bin) to another location (bin).

birdyback–A type of intermodal transport that ships cargo using both roadways and air shipments.

bit–A shortened form of the phrase binary digit. It can have only the values 0 or 1.

black belt–In six sigma, a team leader for process improvement. Their responsibilities include defining, measuring, and controlling the improvement process.

blanket order–Syn.: blanket purchase order.

blanket order release–A message that is used to release a quantity from a blanket order.

blanket purchase order–A long-term commitment to a supplier for material against which short-term releases will be generated to satisfy requirements. Often blanket orders cover only one item with predetermined delivery dates. Syns.: blanket order, standing order. See: open-end purchase order.

blanket rate–A rate that does not depend on the distance cargo is transported.

blanket release–The authorization to ship and/or produce against a blanket order or contract.

blanket routing–A routing that lists groups of operations needed to produce a family of items. The items may have small differences in size, but they use the same sequence of operations. Specific times or tools for each individual item can be included.

bleeding edge–An innovative process that may be unusual enough to pose a risk to the customer or client.

blemish–An imperfection that is severe enough to be noticed but should not cause any real impairment with respect to intended normal or reasonably foreseeable use. See: defect, imperfection, nonconformity.

blend formula–An ingredient list for a product in process industries. See: batch card, manufacturing order, mix ticket.

blend order–A manufacturing order to a blending department authorizing it to mix the ingredients of a product. See: assembly order.

blending–The process of physically mixing two or more lots or types of material to produce a homogeneous lot. Blends normally receive new identification and require testing.

blending department–In process industries, the name of the department where the ingredients are mixed. See: final assembly department.

block diagram–A diagram that shows the operations, interrelationships, and interdependencies of components in a system. Boxes, or blocks (hence the name), represent the components; connecting lines between the blocks represent interfaces. There are two types of block diagrams: (1) functional block diagrams that show a system's subsystems and lower-level products, their interrelationships, and interfaces with other systems; and (2) reliability block diagrams, which are similar to functional block diagrams except they are modified to emphasize those aspects influencing reliability. See: flowchart.

block scheduling–An operation-scheduling technique in which each operation is allowed a block of time, such as a day or a week.

block stacking–A storage method in which pallets, cases, or cartons are stacked upward from the floor to whatever practical height is available without the use of shelves.

blockchain–A technology using a distributed ledger that stores information about transactions that can be viewed by many entities within the supply chain. A blockchain cannot be altered, thereby creating a permanent record of the transaction and facilitating more effective visibility and transparency of product movement throughout the supply chain. See: cryptocurrency, decentralized computer network, lot control.

blocked operation–An upstream work center that is not permitted to produce because of a full queue at a downstream work center or because no kanban authorizes production.

blocking–The condition requiring a work center that has parts to process to remain idle as long as the queue to which the parts would be sent is full or kanbans authorizing production are not present.

blowthrough–Syn.: phantom bill of material (BOM).

blueprint–In engineering, a line drawing showing the physical characteristics of a part.

BMC–Acronym for Box Maker's Certificate.

body of knowledge–The knowledge in a given area that a person is expected to understand to be certified as a practitioner.

boilerplate–The standard terms and conditions on a purchase order or other document.

BOM–Acronym for bill of material.

bond–A financial instrument representing a loan of funds made to an organization for a specified period of time in return for regular interest payments.

bonded warehouse–Secured and monitored buildings or parts of buildings designated for storing imported merchandise. Goods can be exported from a bonded warehouse without paying additional duty, and they are managed by a government or private organization. See: duty paid warehouse.

book inventory–An accounting definition of inventory units or value obtained from perpetual inventory records rather than by actual count.

book value–The accounting value of an asset.

booked orders–Demand that has been confirmed. See: customer order, demand, order penetration point.

bookings–The value of all sales after discounts and rebates have been applied.

Boolean algebra–A form of algebra that deals with values, such as 1 and 0, to represent true or false. It also uses conjunctions such as and, or, and not, to perform logical operations. Boolean algebra provides an essential framework for describing logical expressions and operations in computer science theory and applications.

bottleneck–A facility, function, department, or resource whose capacity is less than the demand placed upon it. For example, a bottleneck machine or work center exists where jobs are processed at a slower rate than they are demanded. Syn.: bottleneck operation. See: limiting operation.

bottleneck operation–Syn.: bottleneck.

bottom-up estimating–A method of estimation that involves disaggregating a piece of work into components, estimating each component requirement, and adding the resulting times and/or costs to arrive at the estimate for the whole.

bottom-up planning–Planning for resource requirements by starting at the bottom of the bill of material (BOM) or services, estimating the resources required to produce each product or service, and then adding up the resources.

bottom-up replanning–In material requirements planning (MRP), the process of using pegging data to solve material availability problems or other problems. This process is accomplished by the planner (not the computer system), who evaluates the effects of possible solutions. Potential solutions include compressing lead time, cutting order quantity, substituting material, and changing the master schedule.

Box Maker's Certificate (BMC)–A stamp that is printed on a box indicating that the box meets certain requirements such as strength, construction, and basis weight.

Box-Jenkins model–A forecasting method based on regression and moving average models. The model is based on past observations of the item to be forecast at varying time lags and on previous error values from forecasting, rather than regression of independent variables. See: forecast.

BPM–Acronym for business process management.

BPO–Acronym for business process outsourcing.

BPR–Acronym for business process reengineering.

bracketed recall–A recall from customers of suspect lot numbers plus a specified number of lots produced before and after the suspect ones.

brainstorming–A technique that teams use to generate ideas about a particular subject. Each person on the team is asked to think creatively and write down as many ideas as possible. The ideas are not discussed or reviewed until after the brainstorming session.

branch and bound–An operations research model for determining optimal solutions by using a subset of possible solutions and eliminating those that are not optimal.

branch warehouse–Syn.: distribution center (DC).

brand loyalty–The tendency of some consumers to stay with a preferred product in spite of a competitor's advantages.

brand manager–The person in charge of the marketing program for a given brand. Syn.: product manager.

brand name–1) A word or combination of words used to identify a product and differentiate it from other products. 2) The verbal part of a trademark, in contrast to the pictorial mark. 3) A trademark word.

brand recognition–The degree to which customers recognize a particular brand identity and associate it with a particular product line relative to other available brands.

branding–The use of a name, term, symbol, design, or a combination of these to identify a product.

breadman–In kanban, an arrangement in which the customer does not specify the quantity to be delivered on a specific basis but instead gives the supplier a set of guidelines. The delivery person determines the quantity according to these rules.

break-bulk–1) The process of dividing truckloads, railcars, or containers of homogeneous items into smaller, more appropriate quantities for use. 2) A distribution center (DC) that specializes in break-bulk activities. 3) Unitized cargo in bales, boxes, or crates that is placed directly in a ship's holds rather than in containers. See: break-bulk warehousing.

break-bulk warehousing–A form of cross-docking in which the incoming shipments are from a single source or manufacturer. See: break-bulk.

breakdown maintenance–Remedial maintenance that occurs when equipment fails and must be repaired on an emergency or priority basis. Syns.: irregular maintenance, reactive maintenance.

breakdown sheet–A document that contains information about the number of cases that are supposed to be on each pallet.

break-even analysis–A study of the number of units or amount of time required to recoup an investment. See: break-even time.

break-even chart–A graphical tool showing the total variable cost and fixed cost curve along with the total revenue curve. The point of intersection is defined as the break-even point (i.e., the point at which total revenues exactly equal total costs). See: total cost curve, break-even point.

break-even point–The level of production or the volume of sales at which operations are neither profitable nor unprofitable. The break-even point is the intersection of the total revenue and total cost curves. See: total cost curve, break-even chart.

break-even time–The time it takes for a company to break even from an investment in a product, project, or activity. See: break-even analysis.

breeder bill of material (BOM)–A BOM that recognizes and plans for the availability and usage of by-products in the manufacturing process. The breeder bill allows for complete by-product material requirements planning (MRP) and product or by-product costing.

bribe–A gift, money, or a favor given by one person to another intending to influence the person's decision, judgment, or conduct. Offering or accepting bribes is illegal in most countries and a violation of the United Nations Global Compact.

brick and mortar–A company that sells only through a physical location. See: click and mortar.

broadband–A coaxial cable offering several channels for text, voice, and/or video transmission.

broker–Syn.: freight broker.

browser–Software used on the internet to retrieve and display relevant information, connect to other sites using hypertext links, display images, and play audio files.

BTO–Acronym for build-to-order.

bubble chart–A diagram that attempts to display the interrelationships of systems, functions, or data in a sequential flow. It derives its name from the circular symbols used to enclose the statements on the chart.

bucket–A time period, usually a week, used in a time-phased planning. Syn.: time bucket.

bucketed system–A material requirements planning (MRP), distribution requirements planning, or other time-phased system in which all time-phased data is accumulated into time periods called buckets. If the period of accumulation is one week, then the system is said to have weekly buckets.

bucketless system–A material requirements planning (MRP), distribution requirements planning (DRP), or other time-phased system in which all time-phased data is processed, stored, and usually displayed using dated records rather than defined time periods (buckets).

budget–A plan that includes an estimate of future costs and revenues related to expected activities. The budget serves as a pattern for and a control over future operations.

budget at completion (BAC)–The total planned budget for a project.

budgeted capacity–The volume and mix of throughput on which financial budgets were set and overhead and burden absorption rates established.

buffer–1) A quantity of materials awaiting further processing. It can refer to raw materials, semi-finished stores or hold points, or a work backlog that is purposely maintained behind a work center. 2) In theory of constraints, buffers can be time or material, and they support throughput and/or due date performance.

buffer management–In theory of constraints, a process in which all expediting in a shop is driven by what is scheduled to be in the buffers (constraint, shipping, and assembly buffers). By expediting this material into the buffers, the system helps avoid idleness at the constraint and missed customer due dates. In addition, the reasons items are missing from the buffer are identified, and the frequency of occurrence is used to prioritize improvement activities. See: green zone.

buffer penetration–The amount of inventory buffer for a resource that has been depleted, typically expressed as a percentage of the total buffer size.

buffer profile–A group of parts with similar lead time, variability, control, and order management characteristics.

buffer status alerts–Alerts in demand-driven material requirements planning (DDMRP) that show the status of priorities of network dependencies.

buffer stock–Syn.: safety stock.

buffer zone–A stratification layer within a stock buffer used in drum-buffer-rope scheduling. Typically, buffer zones are color coded with red, yellow, and green categories.

build cycle–The time period between a major setup and completion activities. It recognizes cyclical scheduling of similar products with minor changes from one product or model to another. It is commonly used in project or software deployment.

build-to-order (BTO)–Syn.: make-to-order (MTO).

build-up forecast–A qualitative forecasting technique in which individuals who are familiar with specific market segments estimate the demand within those segments. The overall forecast is then obtained by calculating the sum of the forecasts for these segments.

bulk cargo ship–A ship or other type of vessel specifically designed to transport unpackaged bulk cargo, such as grain and coal, in loose form. The cargo is loaded directly into the ship's hold.

bulk issue–Parts that are issued from stores to work in process (WIP) inventory but are not based on a job order. They are issued in quantities estimated to cover the requirements of individual work centers and production lines. The issue may be used to cover a period of time or to fill a fixed-size container.

bulk packing–Placing several small packages in a larger container to prevent damage or theft.

bulk storage–Large-scale storage for raw materials, intermediates, or finished products. Each storage vessel normally contains a mixture of lots and materials that may be replenished and withdrawn for use or pack-out simultaneously.

bulk vessel–See: bulk cargo ship.

bullwhip effect–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.

bundle–One or more unassembled items shipped together as a set of items to reduce freight costs.

bundling–Combining two or more products or services into a single transaction.

burden–Syn.: overhead.

burden rate–A cost, usually in dollars per hour, that is normally added to the cost of every standard production hour to cover overhead expenses.

burn rate–The rate at which a company or project consumes budget and resources. It can be used to project if and when additional resources or money will be required.

business case–A case developed to justify the need for a particular procurement or project. The case is developed with structured written documentation capturing both the quantifiable and unquantifiable characteristics required to justify the budget and resources needed.

business cluster–A collaboration of related businesses, suppliers, and institutions in a particular industry that operate in close proximity for competitive advantage and increased productivity.

business continuity management system (BCMS)–Part of the overall management system that establishes, implements, operates, monitors, reviews, maintains, and improves an organization's capability of delivering products or services at acceptable predefined levels following a disruptive incident. It is based upon identifying potential threats and their impacts to an organization and its business operations. The system provides a framework for building organizational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand, and value-creating activities.

business continuity planning (BCP)–Plans to ensure that an organization is capable of continuing to deliver products or services at acceptable predefined levels following a disruptive incident. The plans are developed by identifying potential threats to an organization and the impacts on business operations those threats might cause. These plans provide a framework for building organizational resilience with the capability of an effective response to safeguard the interests of its key stakeholders, reputation, brand, and value-creating activities.

business cycle–A period of time marked by long-term fluctuations in the total level of economic activity. Measures of business cycle activity include the rate of unemployment and the level of gross domestic product.

business environment–Syn.: operating environment.

business intelligence–Information collected by an organization about customers, competitors, products or services, and processes. Business intelligence provides organizational data in such a way that the organizational knowledge filters can easily associate with this data and turn it into information for the organization. Technology often is used to gather, store, analyze, and provide access to data in order to help consumers make better business decisions by offering them accurate, current, and relevant information. See: data warehouse.

business judgment rule–A legal presumption that corporate directors or officers are exempt from liability if they have acted in good faith with rational business judgment and have no conflicts of interest.

business market–Syn.: industrial market.

business plan–1) A statement of long-range strategy and revenue, cost, and profit objectives usually accompanied by budgets, a projected balance sheet, and a cash flow statement. A business plan is usually stated in terms of dollars and grouped by product family, which is then translated into tactical functional plans through the production planning process or the sales and operations planning (S&OP) process. See: business planning, long-term planning, strategic plan. 2) A document consisting of the business details (organization, strategy, and financing tactics) prepared by an entrepreneur to plan for a new business.

business planning–The process of constructing the business plan. See: business plan.

business process–A set of logically related tasks or activities performed to achieve a defined business outcome.

business process management (BPM)–A business discipline or function that uses business practices, techniques, and methods to create and improve business processes. BPM is a holistic approach for using appropriate business disciplines to gain business performance improvements across the enterprise or supply chain. It promotes business effectiveness and efficiency while striving for innovation, flexibility, and integration with technology. Most process improvement disciplines or activities can be considered as BPM.

business process outsourcing (BPO)–Contracting with third parties to perform non-core activities within a business. Functions that often are outsourced include human resources, accounts receivable (AR), accounts payable (AP), and payroll.

business process reengineering (BPR)–A procedure that involves the fundamental rethinking and redesign of business processes to achieve organizational improvements in such critical measures of performance as cost, quality, service, and speed. Any BPR activity is distinguished by its emphasis on process, rather than functions and products, and the customers of the process.

business rule review–Regular review of business rules by a middle- or upper-level supply chain manager to ensure that a business rule is in line with the objectives and strategy of the organization as well as the operational aspects the rule governs.

business rules–The rules for an organization, such as policies or procedures, that define or constrain some aspect of the business and are meant to provide guidance.

business service–The software aspect of e-commerce. It performs activities, such as encryption, website hosting, and remote storage, that are required to support business transactions.

business strategy–A plan for choosing how to compete. Business strategies can be classified into four general categories: (1) least cost, (2) differentiation, (3) focus, and (4) best cost.

business unit–A division or segment of an organization generally treated as a separate profit-and-loss center.

business-to-business (B2B)–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.

business-to-consumer (B2C)–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.

buyer–An individual whose functions may include supplier selection, negotiation, order placement, supplier follow-up, measurement and control of supplier performance, value analysis, and evaluation of new materials and processes. In some companies, the functions of order placement and supplier follow-up are handled by the supplier scheduler.

buyer behavior–The way individuals or organizations behave in a purchasing situation. The customer-oriented concept identifies the wants, needs, and desires of customers and adapts the resources of the organization to deliver need-satisfying goods and services.

buyer code–A code used to identify the purchasing person responsible for a given item or purchase order.

buyer cycle–The purchasing sequence that generally follows the buyer's product and budget cycles.

buyer/planner–A buyer who also performs material planning activities. This term should not be confused with planner/buyer, which is a synonym for supplier scheduler.

buyer's market–A market in which goods can easily be secured and in which the economic forces of business tend to cause goods to be priced at the purchaser's estimate of value.

buying capacity–Syn.: capacity buying.

buying down–For products that historically have experienced price swings, attempting to buy when the price is low or down. See: hedging, speculative buying.

by-product–A material of value produced as a residual of or incidental to the production process. The ratio of by-product to primary product is usually predictable. By-products may be recycled, sold as is, or used for other purposes. See: co-product.

C

CAA–Acronym for Clean Air Act.

cache–Hardware or software used to store frequently retrieved data to improve data access times and application performance.

CAD–Acronym for computer-aided design.

CAD/CAM–The integration of computer-aided design and computer-aided manufacturing to achieve automation from design through manufacturing.

CAE–Acronym for computer-aided engineering.

cage–A secure area used to store valuable items.

CAIT–Acronym for computer-aided inspection and test.

calculated capacity–Syn.: rated capacity.

calculated usage–The determination of usage of components or ingredients in a manufacturing process by multiplying the receipt quantity of a parent by the quantity of each component or ingredient identified in the bill or recipe. This calculation also accommodates standard yields.

calendar time–The passage of days or weeks as in the definition of lead time or scheduling rules, in contrast with running time.

calendar unit–The smallest unit of time used to show activities being carried out in a project plan.

calibration–The comparison of a measurement instrument or system of unverified accuracy with a measurement instrument or system of known accuracy to detect any variation from the required performance specification.

calibration frequency–The interval of days between equipment calibrations. This interval should be determined carefully because calibrating too frequently leads to increased cost, while calibrating too infrequently can result in decreased output quality.

call center–Facility housing personnel who respond to customer phone queries. These personnel may provide customer service or technical support. Call center services may be in-house or outsourced.

CAM–Acronym for computer-aided manufacturing.

campaign–A series of batches of the same product run together (back-to-back).

cancellation charge–A fee charged by a seller to cover the costs associated with a customer's cancellation of an order. If the seller has started engineering work, purchased raw materials, or started manufacturing operations, these charges could also be included in the cancellation charge.

can-order point–An ordering system used when multiple items are ordered from one vendor. The can-order point is a point higher than the original order point. When any one of the items triggers an order by reaching the must-order point, all items below their can-order point are also ordered. The can-order point is set by considering the additional holding cost that would be incurred should the item be ordered early.

capability study–Syn.: process capability analysis.

capable-to-promise (CTP)–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.

capacity–1) The capability of a system to perform its expected function. 2) The capability of a worker, machine, work center, plant, or organization to produce output per time period. Capacity required represents the system capability needed to make a given product mix (assuming technology, product specification, etc.). As a planning function, both capacity available and capacity required can be measured in the short term (capacity requirements plan), intermediate term (rough-cut capacity plan), and long term (resource requirements plan). Capacity control is executed through the input/output control report of the short-term plan. Capacity can be classified as budgeted, dedicated, demonstrated, productive, protective, rated, safety, standing, or theoretical. See: capacity available, capacity required. 3) The required mental ability to enter into a contract.

capacity available–The capability of a system or resource to produce a quantity of output in a particular time period. Syn.: available capacity. See: capacity, available time.

capacity bill procedure–A rough-cut capacity planning (RCCP) method that takes into account any shifts in product mix. Bill of material (BOM) and routing information are required with direct labor-hour or machine-hour data available for each operation. See: bill of labor, bill of resources.

capacity buying–A purchasing practice whereby a company commits to a supplier for a given amount of its capacity per unit of time. Subsequently, schedules for individual items are given to the supplier in quantities to match the committed level of capacity. Syn.: buying capacity. See: capacity reservation contract.

capacity control–The process of measuring production output and comparing it with the capacity plan, determining if the variance exceeds pre-established limits, and taking corrective action to get back on plan if the limits are exceeded. See: input/output control (I/O control).

capacity cushion–Extra capacity that is added to a system after capacity for expected demand is calculated. Syn.: safety capacity. See: protective capacity.

capacity management–The function of establishing, measuring, monitoring, and adjusting limits or levels of capacity in order to execute the load created by all manufacturing schedules (e.g., the production plan, master production schedule (MPS), material requirements plan, and dispatch list) to achieve expected service and cost objectives. Capacity management is executed at four levels: resource requirements planning, rough-cut capacity planning (RCCP), capacity requirements planning (CRP), and input/output control (I/0 control). See: capacity planning.

capacity pegging–Displaying the specific sources of capacity requirements. This is analogous to pegging in material requirements planning (MRP), which displays the source of material requirements. See: pegging.

capacity planning–The process of determining the amount of capacity required to produce in the future. This process may be performed at an aggregate or product-line level (resource requirements planning), at the master-scheduling level (rough-cut capacity planning (RCCP)), and at the material requirements planning (MRP) level (capacity requirements planning (CRP)). See: capacity management, capacity requirements planning (CRP), resource planning, rough-cut capacity planning (RCCP).

capacity planning using overall factors (CPOF)–A rough-cut capacity planning (RCCP) technique. The master schedule items and quantities are multiplied by the total time required to build each item to provide the total number of hours to produce the schedule. Historical work center percentages are then applied to the total number of hours to provide an estimate of the hours per work center to support the master schedule. This technique eliminates the need for engineered time standards. Syn.: overall factors. See: bill of resources, capacity planning, resource profile, rough-cut capacity planning (RCCP).

capacity required–The capacity of a system or resource needed to produce a desired output in a particular time period. Syn.: required capacity. See: capacity.

capacity requirements–The resources needed to produce the projected level of work required from a facility over a time horizon. Capacity requirements are usually expressed in terms of hours of work or, when units consume similar resources at the same rate, units of production.

capacity requirements plan–A time-phased display of present and future load (capacity required) on all resources based on the planned and released supply authorizations (i.e., orders) and the planned capacity (capacity available) of these resources over a span of time. See: load profile.

capacity requirements planning (CRP)–The function of establishing, measuring, and adjusting limits or levels of capacity. In this context, the term refers to the process of determining in detail the amount of labor and machine resources required to accomplish the tasks of production. Open shop orders and planned orders in the material requirements planning (MRP) system are input to CRP, which, through the use of parts routings and time standards, translates these orders into hours of work by work center by time period. Even though rough-cut capacity planning (RCCP) may indicate that sufficient capacity exists to execute the master production schedule (MPS), CRP may show that capacity is insufficient during specific time periods. See: capacity planning.

capacity reservation contract–A supply chain contract structure in which the supplier guarantees a certain level of future capacity to a buyer who has committed to utilize this capacity. If the buyer does not use its committed capacity, the supplier may charge the buyer a penalty. See: capacity buying.

capacity simulation–The ability to do rough-cut capacity planning (RCCP) using a simulated master production schedule (MPS) or material plan rather than live data.

capacity smoothing–Syn.: load leveling.

capacity strategy–One of the strategic choices a firm must make as part of its manufacturing strategy. There are three commonly recognized capacity strategies: lead, lag, and tracking. A lead capacity strategy adds capacity in anticipation of increasing demand. A lag strategy does not add capacity until the firm is operating at or beyond full capacity. A tracking strategy adds capacity in small amounts to attempt to respond to changing demand in the marketplace. See: manufacturing strategy.

capacity utilization–Goods produced, or customers served, divided by total output capacity.

capacity-constrained resource (CCR)–Any resource that, if its capacity is not carefully managed, is likely to become a constraint and compromise the throughput of the organization.

capacity-related cost–A cost generally related to increasing or decreasing capacity in the medium- to long-range time horizon. Personnel costs include the costs of hiring and training direct laborers, supervisors, and support personnel in the areas related to the capacity increase. Equipment purchases to increase capacity are also considered. In contrast, costs related to decreasing capacity include layoffs, the fixed overhead spread over fewer units, the impact of low morale, and the inefficiencies of lower production levels.

capital–Money or resources used to invest in assets that produce products.

capital asset–A physical object that is held by an organization for its production potential and costs more than a given threshold value.

capital budgeting–Actions relating to the planning and financing of capital outlays for such purposes as the purchase of new equipment, the introduction of new product lines, and the modernization of plant facilities. See: payback, net present value (NPV), internal rate of return.

capital expenditure–Money invested in a long-term asset (i.e., one that is expected to last longer than one year). The investment is expected to generate a stream of future benefits.

capital rationing–In financial management, the process of apportioning capital expenditures among prospective projects to conserve limited investment funds.

capital recovery–1) The process of charging periodically to operations amounts that will ultimately equal the amount of capital expenditure. See: amortization, depletion, depreciation. 2) The replacement of the original cost of an asset plus interest. 3) The process of regaining the net investment in a project by means of revenue in excess of the cost from the project. (This usually implies amortization of principal plus interest on the diminishing unrecovered balance.)

capital structure–The combination of permanent short-term debt, long-term debt, preferred stock, and common equity used to finance a firm.

capital-intensive–A situation in which the largest expenditure in an operation is capital as opposed to labor. Ant.: labor-intensive.

CAPP–Acronym for computer-aided process planning.

carbon dioxide equivalent (CO_2e)–A measure that describes different greenhouse gases (GHGs) in a common unit based on the amount of carbon dioxide that has the same global warming potential, allowing the comparison of impact of different combinations of GHGs.

carbon emissions–One of the five green SCOR metrics. A unit of measure currently used for greenhouse gas (GHG) emissions to measure the climate impact of carbon dioxide and other global warming air emissions.

carbon footprint–The amount of carbon dioxide and other greenhouse gases (GHGs) released into the environment by the activities performed by a person, organization, or operation during a given time period. See: carbon handprint.

carbon handprint–A product life cycle metric and approach that emphasizes the enhancement of the positive impacts in the design of sustainable products such as the reduction of greenhouse gas (GHG) emissions relative to those of a baseline product or service. The carbon handprint approach is complementary to the carbon footprint approach, which focuses on minimizing the negative sustainability effects. Both perspectives are useful in the development of wholly sustainable products. See: carbon footprint.

carcass–A non-serviceable item obtained from a customer that is intended for use in remanufacturing.

carcass disassembly–Disassembling items returned for maintenance, repair, and overhaul (MRO) to the bill-of-material level and testing the component parts. In accordance with specific business rules, components that meet or exceed technical performance parameters are placed in storage for use in future production.

carcass prepositioning–The practice of making disposition decisions for reparable parts, cores, and carcasses early in the return material authorization (RMA) process. Instructions for those decisions must be included in the authorization provided to the customers responsible for shipping and the internal stakeholders responsible for receiving. Routing decisions also should be included in those instructions. When long-lead-time, high-demand or prioritization criteria are applied, items are automatically inducted into the maintenance, repair, and overhaul (MRO) process, routing the items to a storage location or disposal.

cargo–A product shipped in an aircraft, railcar, ship, barge, truck, or pipeline.

cargo container capacity–The inside usable cubic volume of a container.

cargo ship–A vessel that carries freight. Some cargo ships carry specific freight, such as liquids, lumber, or vehicles, while others carry general freight either in containers or as non-containerized cargo. See: container ship.

carload–An amount of cargo that utilizes the entire capacity of a railcar.

carload lot–A shipment that attains either the minimum weight or size required to be shipped in a single railcar by itself from origin to destination. The carload rate charged by the carrier is based on its cost to move the entire loaded railcar from origin to destination instead of on the specific characteristics of the freight. This rate is generally lower than the corresponding less-than-carload rate for the shipment, which is based on the weight and the commodity to be hauled.

carnet–Temporary admission granted to goods that are passing through a country rather than being imported into it. The goods can cross several boundaries duty-free and tax-free without customs inspection. Disposable and consumable items are excluded. Syn.: ATA carnet.

carousel–A series of modular, movable shelved or compartmentalized bin facings linked together by means of a motorized oval track. Inventory is brought to the stock person rather than requiring the stock person to move to the bin's location. See: part-to-picker system.

carrier–A company that provides air, water, or land transportation services.

carrying cost–The cost of holding inventory, usually defined as a percentage of the dollar value of inventory per unit of time (generally one year). Carrying cost depends mainly on the cost of capital invested as well as costs of maintaining the inventory, such as taxes and insurance, obsolescence, spoilage, and space occupied. Such costs vary from 10 percent to 35 percent annually, depending on type of industry. Carrying cost is ultimately a policy variable reflecting the opportunity cost of alternative uses for funds invested in inventory. Syn.: holding cost. See: inventory cost.

cartel–A group of companies that agree to cooperate, rather than compete, in producing a product or service, thus limiting or regulating competition. See: collusion.

CAS–Acronym for complex adaptive system.

cascaded system–A multistage operation in which the input to each stage is the output of a preceding stage, thereby causing interdependencies among the stages.

cascading yield loss–The condition where yield loss happens in multiple operations or tasks, resulting in a compounded yield loss. Syn.: cumulative yield. See: composite yield.

CASE–Acronym for computer-assisted software engineering.

cash budget–A budget based on the planned cash receipts and disbursements of a plant, division, or firm.

cash conversion cycle–1) In retailing, the length of time between the sale of products and the cash payments for a company's resources. 2) In manufacturing, the length of time from the purchase of raw materials to the collection of accounts receivable (AR) from customers for the sale of products or services. See: order-to-cash (O2C) cycle.

cash cow–A highly profitable product or business unit in a low-growth market. See: growth-share matrix.

cash discount–A price break offered for the early payment of an invoice. See: price break.

cash flow–1) The net flow of cash flowing into and out of the business over a specified period of time. Cash flows are commonly classified by the way they were generated. Operating cash flows are generated from the business' common operations. Investing cash flows are generated from investing activities such as the purchase or sale of securities or property, plant, and equipment assets. Financing cash flows are generated from the issuance or payment of debt instruments, equity payments, or dividend payments. 2) The net flow of dollars into or out of a proposed project. Also called cash proceeds or cash generated.

cash flow management–The planning, execution, and control of cash receipts and disbursements with the objective of maintaining the cash balance at a preset positive value. Syn.: funds flow management.

cash flow statement–Syns.: statement of cash flows, funds flow statement.

cash in advance payment–Payment by the importer to the exporter before the exporter ships the goods, providing the maximum protection to the exporter and no protection to the importer.

cash spin–The advantage of reducing assets (especially inventory) in the supply chain and reallocating the saved capital in a more profitable direction. This is also known as free cash spin.

cash-to-cash cycle time–An indicator of how efficiently a company manages its assets to improve cash flow. This is calculated as inventory days plus accounts receivable (AR) days minus accounts payable (AP) days. See: cash conversion cycle, operating cycle.

catalog channel–A facility that receives orders based on a published book of offerings and ships from its warehouse to the customer.

catchball–A lean management process of floating ideas and comments around in an iterative manner, much like tossing a ball back and forth.

categorical data–Syn.: attribute data.

categorical plan–A method of selecting and evaluating suppliers that considers input from many departments and functions within the buyer's organization and systematically categorizes that input. Engineering, production, quality assurance, and other functional areas evaluate all suppliers for critical factors within their respective scopes of responsibility. For example, engineering would develop a category evaluating suppliers' design flexibility. Rankings are developed across categories, performance ratings are obtained, and supplier selections are made. See: weighted-point plan.

category management–1) In marketing, an organizational structure giving managers responsibility for planning and implementing marketing systems for certain product lines. 2) A procurement practice in which buying organizations segment their spend into areas that contain similar or related products, helping procurement managers identify opportunities for consolidation and efficiency. This practice may involve the splitting of direct and indirect products or services or may relate to the dissecting of products or services by value, supplier, type, or volume. See: 80-20 rule, ABC classification, Pareto's law.

causal forecast–A type of forecasting that uses cause-and-effect associations to predict and explain relationships between the independent and dependent variables. An example of a causal model is an econometric model used to explain that the demand for housing is based on the consumer base, interest rates, personal incomes, and land availability. See: associative forecasting.

cause-and-effect diagram–A tool for analyzing process dispersion. It is also referred to as the Ishikawa diagram (because Kaoru Ishikawa developed it) and the fishbone diagram (because the complete diagram resembles a fish skeleton). The diagram illustrates the main causes and sub-causes leading to an effect (symptom). The cause-and-effect diagram is one of the seven tools of quality. Syns.: fishbone chart, fishbone diagram, Ishikawa diagram. See: basic seven tools of quality (B7), fishbone analysis.

caveat emptor–A Latin phrase meaning, "Let the buyer beware," or that the purchase is at the buyer's risk.

CCB–Acronym for change control board.

c-Chart–A control chart for evaluating the stability of a process in terms of the count of events of a given classification occurring in a sample. Syns.: count chart, number defective chart.

CCOR–Acronym for customer chain operations reference.

CCR–Acronym for capacity-constrained resource.

CDL–Acronym for commercial driver's license.

cell–A manufacturing or service unit consisting of a number of workstations and the materials transport mechanisms and storage buffers that interconnect them.

cellular layout–An equipment configuration to support cellular manufacturing. See: work cell.

cellular manufacturing–A manufacturing process that produces families of parts within a single line or cell of machines controlled by operators who work only within the line or cell. See: work cell.

center–In statistics, a way to describe typical values or the central tendency of a data set. The center can be described using several different measures (e.g., mean, median, or mode) depending on the characteristics of the distribution of values in the data set.

center-of-gravity approach–A methodology for locating distribution centers (DCs) at the location representing the minimum transportation costs between the plants, the DCs, and the markets in order to improve speed and minimize supply chain costs. See: grid technique.

center-of-gravity model–Syn.: gravity model.

central limit theorem–A theorem that states that a distribution consisting of sample means can be assumed to be normally distributed, even if the population from which the samples are drawn is not normally distributed.

central point scheduling–A variant of scheduling that employs both forward and backward scheduling, starting from the scheduled start date of a particular operation.

central processing unit (CPU)–The electronic processing unit of a computer that controls the execution and interpretation of instructions and performs mathematical calculations.

central storage–Storing all inventory items in a central location to increase inventory control and to improve inventory record accuracy.

centralized authority–A practice of limiting the ability to make decisions to a few managers.

centralized computer network–A network consisting of one central computer (or possibly more) linked to all others in a given enterprise.

centralized dispatching–The organization of the dispatching function into one central location. This structure often involves the use of data collection devices for communication between the centralized dispatching function (which usually reports to the production control department) and the shop manufacturing departments.

centralized inventory control–A practice in which inventory decision-making for all stock keeping units (SKUs) at all stocking locations is conducted from one department for an entire company.

centralized marketing system–An organizational structure in which a central marketing group manages functionally divided areas such as advertising, sales, and marketing research.

centralized organizational structure–An organizational structure that manages core processes at a corporate level and distributes them across business groups, units, locations, and products. See: decentralized organizational structure.

centralized purchasing–A system in which all purchasing decisions are made from a corporate purchasing office. Ant.: decentralized purchasing.

CEP–Acronym for cost equalization point.

certificate of analysis–A certification of conformance to quality standards or specifications for products or materials. It may include a list or reference of analysis results and process information. This certificate is often required for material custody transfer.

certificate of compliance–A supplier's certification that the supplies or services in question meet specified requirements.

certificate of free sale–A certificate that attests that the goods can be legally sold in the country of export. The intent is to prevent defective products from being exported.

certificate of inspection–A certificate provided by an independent inspection organization attesting to the accuracy of the value and authenticity of the goods as listed on the invoice. The exporter obtains this pre-shipment certificate in the exporting country.

certificate of insurance–A certificate required under some terms of trade that attests that a particular shipment has insurance coverage to cover loss or damage while in transit. It is provided by the exporter's insurance company.

certificate of manufacture–A certificate that attests that the goods were manufactured in the exporter's country meeting minimum specified content requirements. It is provided and signed by the exporter's chamber of commerce or similar official body.

certificate of origin–A document issued by the exporter's chamber of commerce that confirms that the items in a shipment originated in the exporter's country. This document must often accompany the shipment to facilitate entrance into the importing country.

certificate of public convenience and necessity–A certificate that grants authority to a particular carrier, enabling that carrier to act as a common carrier in serving and transporting commodities to a specific area.

certificated carrier–A regulated for-hire air carrier that provides service under an operating certificate.

certification–Documentation of competency by a supplier or by an organization, such as ASCM or ISO. See: supplier certification.

certification audit–An audit occurring within a registration process (e.g., for ISO 9000:2015).

Certified Fellow in Production and Inventory Management (CFPIM)–A retired APICS designation that is a recognition of superior knowledge of, performance in and contribution to the profession. See: Certified in Planning and Inventory Management Fellow (CPIM-F).

certified fixture–An inspection model that conforms to known specifications.

Certified in Integrated Resource Management (CIRM)–A retired APICS designation that is a recognition of a high level of professional knowledge in enterprise-wide processes and activities.

Certified in Logistics, Transportation and Distribution (CLTD)–An APICS designation that is a recognition of a high level of professional knowledge in logistics, transportation, and distribution.

Certified in Logistics, Transportation and Distribution Fellow (CLTD-F)–An APICS designation that is a recognition of superior knowledge of, performance in, and contribution to the field of logistics, transportation, and distribution.

Certified in Planning and Inventory Management (CPIM)–An APICS designation that is a recognition of a high level of professional knowledge in planning and inventory management.

Certified in Planning and Inventory Management Fellow (CPIM-F)–An APICS designation that is a recognition of superior knowledge of, performance in, and contribution to the field of planning and inventory management. Previously denoted as CFPIM.

Certified in Production and Inventory Management (CPIM)–A retired APICS designation. The new designation is Certified in Planning and Inventory Management (CPIM).

Certified in Transformation for Supply Chain (CTSC)–An APICS designation that is a recognition of a high level of professional knowledge in transforming supply chains.

Certified Information Systems Auditor (CISA)–A global certification for individuals who audit, control, monitor, and assess an organization's IT and business systems in order to mitigate risk, such as cybersecurity risks.

certified supplier–A status awarded to a supplier based on the buyer's audit finding that the supplier consistently meets the buyer's predetermined quality, cost, delivery, financial, and count objectives. Incoming inspection of materials and parts from certified suppliers may not be required.

Certified Supply Chain Professional (CSCP)–An APICS designation that recognizes a high level of professional knowledge in supply chain management.

Certified Supply Chain Professional Fellow (CSCP-F)–An APICS designation that is a recognition of superior knowledge of, performance in, and contribution to the field of supply chain management.

ceteris paribus–Latin for "all other things being the same."

CFE–Acronym for cumulative forecast error.

CHAIN Leadership Model–A leadership model that highlights five skills essential for a supply chain leader: collaborative, holistic, adaptable, influential, and narrative.

chain of custody and integrity–The practice of providing visibility into the transfer of custody, movement of inventory, and provenance of a product as it advances through the network by applying sensors or unique identifiers (e.g., quick-response codes, geo-tracking data, blockchain technology, and system controls). This practice improves traceability while minimizing the risk of counterfeit product acceptance, enabling targeted recalls and protection of brand integrity.

chain reaction–A chain of events proposed by W. Edwards Deming suggesting that if an organization improves operational quality, costs will decrease because of less scrap and rework and revenue will increase because the company will be able to sell more products at higher prices. Thus, better quality leads to higher profitability.

champion–1) In quality control, a sponsor of a six sigma implementation project. 2) In general, a sponsor of an improvement effort.

chance variation–Variation in process results occurring because of numerous small factors such as workers, equipment, raw materials, work methods, and environmental differences.

change agent–A person who facilitates change within an organization. This person may or may not be within the organization and may or may not be the initiator of the change.

change control–The process of determining, approving, or rejecting changes to a plan baseline. See: change control board (CCB).

change control board (CCB)–A group of individuals responsible for overseeing the process of change management and changes being put forward as part of a project or within the organization. It may also be referred to as a change review board. The change control board determines the viability of the change request and approves, denies, or makes recommendations accordingly. It usually consists of members of the relevant functional areas of the project, the project manager, and company executives and stakeholders. See: change control.

change management–The business function that coordinates and monitors all changes to the business processes and applications operated by the business as well as to its internal equipment, resources, operating systems, and procedures. The change management discipline is carried out in a way that minimizes the risk of problems that will affect the operating environment and service delivery to the users.

change order–A formal notification that a purchase order or shop order must be modified in some way. This change can result from modifications such as a revised quantity, date, or customer specification; an engineering change; or a change in inventory requirement date.

change request–An application to change scopes of work, budgets, and/or schedules.

changeover–Syn.: setup.

changeover cost–Syn.: setup cost.

changeover flexibility–Syn.: setup flexibility.

channel–1) In queuing theory, a line for waiting. 2) In distribution, routes from raw materials through to consumption. See: distribution channel, marketing channel.

channel conflict–Friction that occurs when multiple channel partners compete for the same customer. It commonly occurs when a manufacturer or distributor engages in direct-to-customer sales, thereby competing with existing retail sales channels.

channel integration–Strengthening relationships up and down the supply chain from suppliers' suppliers to customers' customers. The integration between channel partners can incorporate the companies' decision structures, business processes, supply chain flows, systems and technology, and/or entire organizations.

channel partner–A supplier, manufacturer, distributor, retailer, or service provider that forms a supply chain to make and distribute a set of products or perform services.

characteristics-based forecasting (CBF)–Forecasting demand for products based on the various specific features of that product. Features could include color, type of transmission for a car, type of CPU for a computer, or any defining aspect of the product.

charge ticket–A document used for receiving goods and charging those goods to an operating cost center.

chargeback provisions–Contractual terms specifying how a company may charge a supplier for failure to perform.

chart of accounts–In accounting, a list of general ledger accounts used to track costs, revenues, assets, liabilities, and so on by category.

charter party–A contract of carriage for a shipper's use of all or nearly all the capacity of a vessel that specifies the agreed-upon terms, rate, and duration.

chase production method–A production planning method that maintains a stable inventory level while varying production to meet demand. Companies may combine elements of chase and level strategies to create a hybrid production plan that minimizes total cost over the planning horizon. Syn.: chase strategy.

chatbot–An application or web interface that simulates human conversation via voice or text. See: virtual agent.

chase strategy–Syn.: chase production method.

check digit–A digit added to each number in a coding system that allows for detection of errors in the recording of the code numbers. Through the use of the check digit and a predetermined mathematical formula, recording errors, such as digit reversal or omission, can be discovered. See hash total.

check sheet–A simple data collection tool that tallies occurrences of specific defects or complaints over a period of time (such as daily, weekly, or monthly). Check sheets are one of the basic seven tools of quality (B7).

checking–Verifying and documenting the order selection in terms of both product number and quantity.

checklist–A tool used to ensure that important steps or actions in an operation have been taken. Checklists contain items that are important or relevant to an issue or situation.

churn–The process of customers changing their buying preferences because they find better and/or cheaper products and services elsewhere. The internet makes it easy for customers to shop electronically in search of a better deal.

churn reduction–A decrease in the rate at which customers discontinue their relationship with a company, or switch to competitors.

CIF–Acronym for cost, insurance, and freight.

CIM–Acronym for computer-integrated manufacturing.

circular economy–An economic system intended to minimize waste and maximize the use of resources through a regenerative process achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, recycling, and upcycling. Ant.: linear economy.

circular supply chain–A type of supply chain that involves the reuse, recycling, refurbishment, and repurposing of used products and/or materials to allow companies to maximize their investments in materials and labor, extend the product life cycle, and reduce their carbon footprint. A circular supply chain differs from a forward supply chain in that it considers two-way movement of materials and products. See: forward supply chain.

CIRM–Acronym for Certified in Integrated Resource Management.

CISA–Acronym for Certified Information Systems Auditor.

CISG–Acronym for contracts for the international sale of goods.

city driver–A delivery person who drives a local route as opposed to long-haul route.

claim–A charge made against a company due to loss or damage.

classification–1) The designation of the job function that an employee is assigned to and is proficient in—for example, assembler, machinist, or welder. 2) In inventory management, sorting a group of items by a specific criterion such as annual dollar value of usage, lead time, or demand variability. See: ABC classification. 3) In transportation, determining the freight class for a specific commodity based on its product characteristics that drive carrier costs (i.e., density, stowability, handling, and liability). See: freight class.

classification of defects–The delineation of possible defects in a unit, classified by seriousness: critical (A), major (B), minor (C), or incidental (D).

Clean Air Act (CAA)–A federal law that authorizes the U.S. Environmental Protection Agency (EPA) to protect and improve the nation's air quality and stratospheric ozone layer by regulating air emissions.

clean bill of lading (B/L)–The bill of lading issued after the shipment of goods has been inspected by the recipient, stating that goods have been received without defects. See: bill of lading (B/L).

clean technology–The use of materials, business processes, or practices designed to avoid or reduce the production of any nuisance, waste, or pollution at its source.

Clean Water Act (CWA)–A U.S. federal law governing water pollution with the aim to control water pollution, to improve wastewater treatment, and to protect the wetlands. Under the CWA, the U.S. Environmental Protection Agency (EPA) has implemented pollution control programs such as setting wastewater standards for industry. The EPA also has developed national water quality criteria recommendations for pollutants in surface waters.

cleansheet cost model–An analysis of the costs associated with manufacturing a product or providing a service in order to identify opportunities for improvement and make informed decisions.

cleanup–The neutralization of the effects of production just completed. It may involve activities such as residue cleaning, sanitation, and equipment refixturing, for example.

clearinghouse–An entity restricted to providing services such as settling accounts.

click and mortar–Refers to a brick-and-mortar company that also has succeeded in making online sales. See: brick and mortar.

clickstream–The progression of activity a user exhibits while browsing a webpage or website. The data collected from a clickstream can help the organization to understand a user's behavior and preferences and can be used to improve business decision-making.

client–In information systems, a software program that is used to contact and obtain data from a server program on another computer. Each client program is designed to work with one or more specific kinds of server programs, and each server requires a specific kind of client. A browser is one type of client.

client/server system–A distributed computing system in which work is assigned to the computer best able to perform it from among a network of computers. See: decentralized computer network, modular system.

CLIN–Acronym for contract line items number.

clock card–Syn.: time card.

clockspeed–The rate of change in an industry with respect to product design and new product development, supply chain process design, and organizational structure.

closed period–The accounting time period for which the adjusting and closing entries have been posted. Ant.: open period.

closed-loop feedback system–A planning and control system that monitors system progress toward the plan and has an internal control and replanning capability.

closed-loop MRP–A method of material requirements planning (MRP) that incorporates production planning, sales and operations planning (S&OP), master scheduling, and capacity requirements planning (CRP). Once the initial planning phase is completed and the plans have been accepted as realistic and attainable, the execution processes come into play. These include the control processes of input-output control and detailed scheduling and dispatching. Feedback is received on actual performance to the plans, which is then used to re-evaluate the plans in order to keep them valid.

closed-loop supply chain–A supply chain that incorporates reverse logistics for the return flow of products for reuse, asset recovery, or recycling in a way that is cost-effective and maximizes benefits.

closeness rating–In layout analysis, a measure of how beneficial it would be for departments to be located near one another to increase efficiency and minimize movement.

cloud computing–The use of computer resources, such as data storage and applications, which are accessed by any computer through the internet. See: hybrid cloud, private cloud, public cloud.

cloud service provider–A company that provides public or private cloud services to other organizations for hosting cloud computing software and services.

cloud storage–Computer data storage at a remote location, accessible via the internet or a dedicated private network connection.

CLTD–Acronym for Certified in Logistics, Transportation and Distribution.

CLTD-F–Acronym for Certified in Logistics, Transportation and Distribution Fellow.

CMI–Acronym for co-managed inventory.

CNC–Acronym for computer numerical control.

CO2e–Abbreviation for carbon dioxide equivalent.

coastal water carrier–Any carrier that operates along the coastline, such as in the Atlantic and Pacific oceans or in the Gulf of Mexico. See: internal water carrier.

co-design–Syn.: participative design/engineering.

co-destiny–A strategic supply chain relationship where organizations receive mutual benefit by sharing common goals and interests in their businesses.

coefficient of correlation–A value used to express the relationship between two variables, whether there is a strong or weak correlation. The coefficient of correlation varies from 0 to 1. Values close to 0 indicate no relationship or a weak relationship, and values close to 1 indicate a strong relationship. The existence of a relationship does not prove causality.

coefficient of determination–A measure of the variation occurring in one variable that is due to the changes in behavior of a different variable. The coefficient of determination is often used to measure the expected accuracy of a forecast.

coefficient of variation–In statistics, the ratio of the standard deviation to the mean for a particular process.

COFC–Acronym for container on a flatcar.

cognitive analytics–A type of analytics with human-like intelligence used to analyze large sets of data.

COGS–Acronym for cost of goods sold.

cold chain–The storage and transfer of temperature-controlled products. Industries in the cold chain include food and agriculture, pharmaceuticals, and chemicals.

collaborative forecasting–The process of collecting and reconciling information from within and outside the organization to develop a single projection of demand.

collaborative inventory planning–Working with key customers to carry out supply chain planning. It can be done through a joint sales and operations planning (S&OP) meeting with each key customer and supplier to discuss how to manage demand and supply across the extended enterprise. In collaborative forecasting, the supply chain members jointly maintain and update a single forecasting process in the system.

collaborative planning–Syn.: collaborative planning, forecasting, and replenishment (CPFR).

collaborative planning, forecasting, and replenishment (CPFR)–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.

collaborative supply relationship–Syn.: supplier collaboration, supplier partnership.

collaborative transportation management–A method of sharing information among suppliers, buyers, and transporters to add value to the service.

collective bargaining–A highly regulated system established to control conflict between labor and management. It defines and specifies the rules and procedures of initiating, negotiating, maintaining, changing, and terminating the labor-management relationship.

collusion–The illegal, secretive collaboration of traditional competitors designed to influence the market and disrupt its stability. See: cartel.

colocation–1) Placing supply chain personnel in a partner's organization to facilitate communication and collaboration. 2) The placement of servers and other data equipment from multiple companies within one facility to reduce costs and risk.

co-managed inventory (CMI)–A continuous replenishment method in which the supplier is responsible for managing the inventory in partnership with its customer. See: vendor-managed inventory (VMI).

combined lead time–Syn.: cumulative lead time.

commercial driver's license (CDL)–A driver's license required in the United States to transport large, heavy, or hazardous materials in motor vehicles including trucks, buses, and trailers.

commercial invoice–A document used as a bill and for customs declaration that indicates the names of the seller and buyer, the product being shipped, and its value. The document is provided by the seller.

commercial-off-the-shelf (COTS)–Ready-made computer software or hardware that is available for sale.

committed capability–The portion of the production capability that is currently in use or is scheduled for use.

commodity–An item that is not differentiated from other like products. Commodities are usually sold in bulk and include goods such as agricultural products, mined raw materials or crude oil. See: commodity buying, commodity procurement strategy.

commodity buying–Grouping like parts or materials under one buyer's control for the procurement of all requirements to support production. See: commodity.

commodity procurement strategy–The purchasing plan for a family of items. It includes the plan to manage the supplier base and solve supply problems. See: commodity.

commodity rate–A common carrier rate to ship a specific commodity across a specific origin-destination route.

common carrier–Transportation available to the public that does not provide special treatment to any one party and is regulated in regard to the rates charged, the liability assumed, and the service provided. In the United States, a common carrier must obtain a certificate of public convenience and necessity from the U.S. Federal Trade Commission for interstate traffic. See: for-hire carrier. Ant.: private carrier.

common carrier duties–The requirements of common carriers to offer reasonable transportation and delivery services and rates and to avoid discrimination.

common cause variability–The variability in product quality that results from numerous uncontrollable everyday factors, such as temperature, humidity, and tool wear. Syn.: common variation. See: common cause.

common cause–A source of variation that is inherent in a process over time. Common causes affect every outcome of the process and everyone working in the process. Syn.: random cause. See: assignable cause, assignable variation, common cause variability.

common cost–A cost that is incurred and shared by two or more areas, or by the business as a whole.

common law–Law flowing from judicial decisions throughout the years rather than from legislative action.

common material–Readily available items used in industry that require no special handling.

common parts bill of material (BOM)–A type of planning bill that groups common components for a product or family of products into one BOM, structured to a pseudoparent item number.

common variation–Syn.: common cause variability.

commonality–A condition in which certain raw materials or ingredients are used in multiple parents.

common-size income statement–In accounting, an income statement having values expressed as a percentage of sales rather than dollar values.

communication management plan–A document that describes the communications needs and expectations within a project, including format, dates, locations, and responsibilities.

company culture–A system of values, beliefs, and behaviors inherent in a company. To optimize business performance, top management must define and create the necessary culture.

compensation–The pay and benefits awarded for services rendered to an organization.

compensation laws–Laws designed to pay individuals for injuries sustained on the job, or from a loss due to a product or service.

competitive advantage–The advantage a company has over its rivals in attracting customers in relation to its competitors. Sources of the advantage include characteristics that a competitor cannot duplicate without substantial cost and risk, such as a manufacturing technique, brand name, or human skill set. Syn.: competitive edge.

competitive analysis–An analysis of a competitor that includes its strategies, capabilities, prices, and costs.

competitive benchmarking–Benchmarking a product or service against competitors. Syn.: performance benchmarking. See: benchmarking.

competitive bid–A proposed price offered by a supplier to a buyer for goods or services, which is then compared with the prices proposed by other suppliers. See: invitation for bid (IFB), request for proposal (RFP), request for quote (RFQ).

competitive differentiator–A characteristic that makes a company or product unique within a marketplace.

competitive edge–Syn.: competitive advantage.

competitive intelligence–The information required to conduct a competitive analysis about external events and trends that can affect a company's plans.

competitive strategy–A long-term, often time-phased plan of actions and approaches that a firm needs to pursue in order to achieve competitive advantage in their defined market. The plan will typically be devised to leverage company strengths in areas of market opportunities while also generating plans to protect against competitive threats related to recognized company weaknesses. The competitive strategy is usually a major portion of the overall company strategy.

complete and on-time delivery (COTD)–A metric for customer service defined by delivering all items in an order on time and in the correct quantity. See: deliver in full, on time (DIFOT); on-time in-full (OTIF).

complex adaptive system (CAS)–A dynamic system of heterogeneous, independent agents that interact with each other and learn and adapt over time. The performance of these systems is generally greater than the sum of its parts. A supply chain is an example of such a system.

component–The raw material, part, or subassembly that goes into a higher-level assembly, compound, or other item. This term may also include packaging materials for finished items. See: ingredient, intermediate part.

component availability–The availability of component inventory for the manufacture of a specific parent order or group of orders or schedules.

component lead time offset–Syn.: lead time offset.

composite lead time–Syn.: cumulative lead time.

composite manufacturing lead time–Syn.: cumulative manufacturing lead time.

composite part–A part that represents operations common to a family or group of parts controlled by group technology (GT). Any parts of a composite family should be able to be processed with the same operations and tooling. The goal of composite part grouping is to reduce setup costs.

composite yield–A condition in which loss occurs along several operations, resulting in a decreased yield for the end-item. Syn.: cumulative yield.

composition–The makeup of an item, typically expressing chemical properties rather than physical properties.

compound interest–1) The type of interest that is periodically added to the amount of investment or loan so that subsequent interest is based on the cumulative amount. 2) The interest charges under the condition that interest is charged on any previous interest earned in any time period, as well as on the principal.

compound yield–The cumulative effect of yield loss at multiple operations within the manufacturing cycle.

comptroller–Syn.: controller.

computer numerical control (CNC)–A technique in which a machine tool controller uses a computer or microprocessor to store and execute numerical instructions.

computer-aided design (CAD)–The use of computers in interactive engineering drawing and storage of designs. Programs complete the layout, geometric transformations, projections, rotations, magnifications, and interval (cross-section) views of a part and show its relationship with other parts.

computer-aided engineering (CAE)–Performing engineering design, analysis, and simulation activities using computer software.

computer-aided inspection and test (CAIT)–The use of computer technology in the inspection and testing of manufactured products.

computer-aided manufacturing (CAM)–The use of computers to program, direct, and control production equipment in the fabrication of manufactured items.

computer-aided process planning (CAPP)–The use of computer systems, such as artificial intelligence (AI), to help develop manufacturing process plans, such as by defining operation sequences, machine and tooling requirements, cut parameters, part tolerances, inspection criteria, and other items.

computer-assisted software engineering (CASE)–The use of computer technology to assist in the process of designing, developing, and maintaining software products and systems.

computer-integrated manufacturing (CIM)–The use of computer and automation technologies to integrate and control the entire manufacturing process. CIM bridges various computerized systems and connects them into a coherent, integrated whole.

concentration–The percentage of an active ingredient within the whole. For example, a 40 percent solution of hydrochloric acid.

concept phase–In project management, the first phase in which a project is defined and the scope is planned.

concurrency–The simultaneous processing of multiple activities, resulting in the sharing of resources. See: resource contention.

concurrent design–Syn.: participative design/engineering.

concurrent engineering–Syn.: participative design/engineering.

concurrent planning–Coordinated planning of supply chain functions using real-time upstream and downstream data flows throughout the extended supply chain to increase visibility and to enable real-time decision-making in response to changing market and environmental conditions. Concurrent planning manages links with other functions, such as finance, marketing, and sales to ensure consistency between functional plans and to support the overall strategic plan. See: integrated business planning (IBP).

conference room pilot–Simulation or testing of all business processes from end to end within the new information system in a controlled environment.

confidence interval–The range on either side of an estimated value from a sample that is likely to contain the true value for the whole population.

confidence level–The probability that a particular value lies between an upper and a lower bound, which are its confidence limits.

confidence limit–The bounds of an interval. A probability can be given for the likelihood that the true value will lie between the confidence limits.

configuration–1) The arrangement of components as specified to produce an assembly. 2) The preparation of a computer program for a particular use.

configuration audit–A review of the product against the engineering specifications to determine whether the engineering documentation is accurate, up-to-date, and representative of the components or systems being produced.

configuration control–The function of ensuring that the product being built and shipped corresponds to the product that was designed and ordered. This means that the correct features, customer options, and engineering changes have been incorporated and documented.

configuration management–The ability to manage product data for the life cycle of the product or service with a high level of data integrity to ensure product quality and conformance, as well as efficient operations. This also facilitates an efficient change management and notification process and allows for access to product data.

configurator–Software system that creates, uses, and maintains product models that allow complete definition of all possible product options and variations with a minimum number of data entries.

configure-to-order (CTO)–A production environment where a good or service is determined at order entry by customers who select from a pre-defined list of features, options, and attributes. The key components used in the assembly or finishing process may be planned and usually stocked in anticipation of a customer order or only after receipt of the customer order. Receipt of a customer order initiates assembly of the custom-configured product. This strategy is useful when a large number of end products (based on the selection of options and accessories) can be configured from common components. CTO is distinct from assemble-to-order (ATO) in that the assembly is not standard and is customized to order. See: make-to-order (MTO), make-to-stock (MTS), assemble-to-order (ATO).

conflict minerals–Minerals mined in conditions of armed conflict and human rights abuses and that are sold or traded by armed groups.

conflict of interest–Any business activity, personal or company-related, that interferes with a company's goals or that entails unethical or illegal actions.

conformance–An indication or judgment that a product or service has met the requirements of a relevant specification, functionality, contract, or regulation.

conformance perspective–A measure of how closely a product or service performs to its intended quality.

connected customer–A capability that allows interaction with customers through various integrated communication channels.

connected field service–The management of field service activities through the use of cloud technology and more devices, such as the internet of things (IoT). This provides for the monitoring, analysis, and preventive measures to help manage risks and reduce downtime while lowering costs. See: after-sales service, field service.

connectivity–The ability to communicate effectively with supply chain partners to facilitate interorganizational synchronization.

consigned stocks–Syn.: consignment inventory.

consignee–1) The receiver of goods from a shipment of freight. 2) The party that receives goods from a consignor. See: consignor.

consignment–1) A shipment that is handled by a common carrier. 2) The process of a supplier placing goods at a customer location without receiving payment until after the goods are used or sold. See: consigned stocks, consignment inventory.

consignment inventory–Inventories that are in the possession of customers, dealers, agents, brokers, etc., but remain the property of the manufacturer by agreement with those in possession. The ownership transfer is usually triggered by the use of materials. Syns.: consigned stocks, vendor-owned inventory (VOI). See: consignment.

consignor–1) The sender of a shipment in a transport contract. 2) The party that delivers goods to a consignee. See: consignee.

consolidation warehouses–Collection points that receive less-than-truckload (LTL) shipments from regional sources and then ship them in carload or truckload quantities to a manufacturing facility or other location.

consolidator–A company that groups together various shipments or orders to facilitate movement and lower logistics costs.

consortium–A group of companies that work together to jointly produce a product, service, or project.

constant–A quantity that has a fixed value. Ant.: variable.

constrained optimization–Achieving the best possible solution to a problem in terms of a specified objective function and a given set of constraints.

constraint–1) Any element or factor that prevents a system from achieving a higher level of performance with respect to its goal. Constraints can be physical, such as a machine center or a lack of material, but they can also be managerial, such as a policy or procedure. 2) One of a set of equations that cannot be violated in an optimization procedure.

constraint accounting–Syn.: theory of constraints (TOC) accounting.

constraint theory–Syn.: theory of constraints (TOC).

constraint-oriented finite loading–A finite loading technique that plans orders around bottleneck work centers. The objective is to maximize total production throughput. Orders in small lot sizes aggregate into large lot sizes at the constraint and then load forward. Prior operations are then backward-scheduled, and downstream operations are forward-scheduled. See: drum-buffer-rope (DBR), order-oriented finite loading.

constraints management–The practice of managing resources and organizations in accordance with theory of constraints principles. See: theory of constraints (TOC).

consular invoice–A special invoice used for goods being sent to the importer's country. The invoice is provided by the consulate of the importing country, is written in the language of the importing country, and may require a government employee's approval. It is used to expedite customs clearance and determine applicable taxes.

consumable–A supply or material (such as paint, cleaning materials, or fuel) that is consumed or exhausted in the production or sale of a good or service. Syn.: expendables. See: consumable tooling.

consumable tooling–Tooling that is consumed or exhausted during the production of a good. See: consumable.

consumer–A person who purchases a good or service for his or her own use (not for resale). See: customer.

consumer durable goods–A division of durable goods that includes items intended for consumer use, such as refrigerators—as opposed to industrial goods, such as forklifts. See: durable goods.

consumer market–A market composed of individuals and families who buy products and services for consumption. See: government market, industrial market, institutional market.

consumer price index–An economic metric that measures the change to the cost of buying a specific set of goods and services compared with the cost of buying the same set of goods and services during an earlier time period.

consumer risk (ß)–The probability that a defective product will go undetected during quality assurance processes and ultimately enter the consumer's marketplace. See: type II error.

consumer surplus–A result of benefit to a consumer when the actual price for a good or service is less than the highest price a consumer is willing to pay for that good or service.

consuming the forecast–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.

contactless–Using technologies, such as radio frequency identification (RFID), for transactions without physical contact.

container–A large box used for shipping commodities and other goods. Containers are often used for intermodal and multimodal transportation, as they can be transferred to a cargo ship, train, or truck without handling the goods.

container design–The characteristics of the product that make it transportable with ease of handling and stowability. Container concepts include packaging, monetary density, and physical density.

container on a flatcar (COFC)–A specialized form of containerization in which rail, motor, and sea transport coordinate. See: intermodal transport, multimodal solutions.

container security initiative (CSI)–An agreement that allows U.S. customs agents in foreign ports to identify and inspect high-risk containers prior to their being loaded on a ship bound to a U.S. port.

container ship–Ships that can hold large quantities of truck-size (20-foot and 40-foot) intermodal containers of seagoing non-bulk cargo. See: cargo ship, container.

containerization–A shipment method in which commodities are placed in containers, and after initial loading, the commodities are not rehandled in shipment until they are unloaded at the destination. See: palletization, unitization.

content management application–An application that supports the evolutionary life cycle of digital-based information and makes information dynamically updatable online. These applications also have the ability to publish content to a repository and support access to digital-based content.

contingency planning–A process for creating alternative plans to facilitate project success if certain risk events occur.

contingency reserve–A budget of money or time allowed over an initial estimate to reduce the likelihood of overruns.

contingent project–A project that can be accepted only if one or more other projects are accepted first. See: independent project, mutually exclusive project.

continuous flow distribution–A pull system diverting products in response to customer requirements while keeping distribution costs low.

continuous flow production–Syn.: continuous production.

continuous improvement (CI)–Syn.: continuous process improvement (CPI).

continuous manufacturing–Syn.: continuous production. See: flow shop.

continuous process–Syn.: continuous production.

continuous process control–The use of sensors to monitor a process and make automatic changes in operations through the design of appropriate feedback control loops. Devices used may be mechanical, electromechanical, or computerized.

continuous process improvement (CPI)–A never-ending effort to expose and eliminate root causes of problems through the use of small, incremental improvement steps. Syn.: continuous improvement (CI). See: kaizen.

continuous production–A production system in which the productive equipment is organized and sequenced according to the steps involved to produce a narrow range of standard products. Material flow is continuous during the production process. The routing of the jobs is fixed, and setups are seldom changed. Examples of items produced by continuous production include gasoline, steel, fertilizer, glass, and paper. Syns.: continuous flow production, continuous manufacturing, continuous process. See: mass production, project manufacturing.

continuous replenishment–A practice of supplier collaboration in which a supplier is notified daily of actual sales or warehouse shipments and commits to replenishing these sales without stockouts and without receiving formal replenishment orders. The result is a lowering of associated costs and an improvement in inventory turnover. See: quick-response program (QRP), rapid replenishment, vendor-managed inventory (VMI).

continuous review system–Syn.: perpetual review system.

continuous variable–A variable, such as height, temperature, or weight, that can be measured along a continuous scale. See: discrete variable.

contract–An agreement between two or more people or companies to perform or not to perform specific acts or services or to deliver merchandise. A contract may be oral or written. A purchase order, when accepted by a supplier, becomes a contract.

contract accounting–The function of collecting costs incurred on a given job or contract, usually paid at certain levels of progress. Certain U.S. government contracting procedures require contract accounting.

contract administration–Managing all aspects of a contract to guarantee that the contractor fulfills their obligations.

contract carrier–A carrier that does not serve the general public but provides transportation for hire for one or a limited number of shippers under a specific contract. See: for-hire carrier.

contract date–The date when a contract is accepted by all parties.

contract drafting–The contract particulars and what needs to be included in the contract for a specific procurement process. Items include what type of payment is needed, what Incoterm is preferred, delivery time, and other factors set in the specification drafting. See: Incoterms.

contract labor–Self-employed individuals or firms contracted by an organization to perform specific services on an intermittent or short-term basis.

contract liability–A document that defines the future economic liability the company has assumed with each new service agreement, extended warranty, or other replacement or returns agreement. Liability refers to the responsibility or obligation a party has to perform some act, resulting from contracts, torts, or other bases for legal responsibility.

contract line items number (CLIN)–Specific items that are priced separately on a contract.

contract manufacturing–A situation in which a third party makes products that are packaged under another company's label.

contract reporting–Reporting of work completed against a contract in order to determine status and reduce risk.

contract target cost–The estimated cost negotiated in a contract.

contract warehouse–A storage space provided by a third-party logistics (3PL) or fourth-party logistics (4PL) operation that stores goods on behalf of a customer. The customer and the provider enter into a contractual relationship that typically results in a lower cost than a public warehouse. In addition, contract warehouses often offer a range of logistics services.

contribution margin–An amount equal to the difference between sales revenue and variable costs, which is used to estimate profitability.

contribution margin pricing–A method of setting prices based on the contribution margin. The price is set between a ceiling, or the amount the seller wants, and a floor, which is the total of the variable costs.

control–Comparing actual to planned performance and taking corrective action as needed to align performance with plan.

control board–A visual means of showing machine loading or project planning, usually a variation of the basic Gantt chart. Syns.: planning board, schedule board. See: dispatch board, schedule chart.

control center–In a centralized dispatching operation, the place at which the dispatching is done.

control chart–A graphic comparison of process performance data with predetermined computed control limits. The process performance data usually consists of groups of measurements selected in the regular sequence of production that preserve the order. The primary use of control charts is to detect assignable causes of variation in the process as opposed to random variations. The control chart is one of the seven tools of quality. Syn.: process control chart.

control decision–A decision about the planning or controlling of daily operations.

control limit–A statistically determined line on a control chart (upper control limit or lower control limit). If a value occurs outside this limit, the process is deemed to be out of control.

control number–A manufacturing order or schedule number used to identify a specific instance or period of production.

control phase–One of the six sigma phases of quality. Process performance is observed, often with control charts, for steady results.

control point–In theory of constraints, a strategic location in the logical product structure for a product or family that simplifies the planning, scheduling, and control functions. Control points include gating operations, convergent points, divergent points, constraints, and shipping points. Detailed scheduling instructions are planned, implemented, and monitored at these locations, allowing materials to flow rapidly through the facility without detailed work center scheduling and control.

control system–A system for the collection and analysis of feedback from a given set of functions for the purpose of control. Control may be implemented by monitoring or systematically modifying the parameters or policies used in those functions or by preparing control reports that initiate useful action when significant deviations and exceptions occur.

controllable cost–A cost that is under the direct control of a given level of management.

controlled access–1) Fenced or walled areas within a warehouse or yard usually monitored by security cameras. These areas are used to store high-value items. 2) Limiting access to an application through the use of security.

controlled atmosphere containers–Containers that use advanced technology to adjust the atmospheric gases, such as carbon dioxide, oxygen, and nitrogen, within a container in order to minimize spoilage and increase shelf life of agricultural products during transportation.

controlled issue–Syn.: planned issue.

controller–The person responsible for financial and managerial accounting within a company. Syn.: comptroller.

convergent point–The point where multiple activities intersect in a process or project flow diagram.

convertible security–An asset (stock or bond) that may be changed for another asset at the owner's request.

conveyance–1) An object used to hold material as it is being transferred from one point of use to another. 2) Movement of material.

conveyor–A device following a fixed route that has the capability of moving material between points in a facility. This device commonly is used when there is a high volume of flow along the route.

ConWip–A shortened form of the phrase "constant work in process." This is a pull methodology that limits the amount of work in process (WIP) inventory by only releasing work at the start of a sequence when other work is completed at the end of that sequence.

cooperative training–An educational process in which students alternate formal studies with actual on-the-job experience. Successful completion of the off-campus experience may be a prerequisite for graduation from the program of study.

co-product–A product that is usually manufactured together with or sequentially with another product because of product or process similarities. See: by-product.

core competencies–Skills or knowledge that enable a firm to provide the greatest level of value to its customers in a way that is difficult for competitors to emulate and that provides for future growth. Core competencies may be in the form of technology, skills of personnel, or knowledge and expertise solely owned by the organization.

core process–That unique capability that is central to a company's competitive strategy.

core team–A cross-functional team of specialists formed to manage and participate in a project, such as a new product introduction. See: cross-functional team.

corporate culture–The set of important assumptions that members of the company share. It is a system of shared values about what is important and shared beliefs about how the company works. These common assumptions influence the ways the company operates.

corporate purchasing cards–Syn.: procurement credit card.

corporate social responsibility (CSR)–Self-regulation by companies for monitoring their activities and complying with laws; social, environmental, and ethical standards; and international norms as part of their business model.

corrective action–The implementation of solutions resulting in the reduction or elimination of an identified problem.

corrective maintenance–The maintenance required to restore an item to a satisfactory condition.

correlated demands–Demands that consistently vary in the same direction because of the relationship between the items demanded.

correlation–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.

correlation coefficient–A measure of the degree of correlation between two values. The coefficient ranges from -1 to 1.

cost accounting–The branch of accounting that is concerned with recording and reporting business operating costs. It includes the reporting of costs by departments, activities, and products.

cost allocation–The assignment of costs that cannot be directly related to production activities via more measurable means. An example is to assign corporate expenses to different products based on the amount of direct labor costs or hours.

cost analysis–Review and evaluation of actual or anticipated cost data.

cost baseline–The accumulated estimated costs of project activities used to approve the project budget and compare with actual costs.

cost center–A segment of an organization, typically a department, for which costs are collected and formally reported. The criteria in defining cost centers are that the cost be significant and that the area of responsibility be clearly defined. A cost center is not necessarily identical to a work center.

cost control–Applying procedures that monitor the progress of operations against authorized budgets and taking action to achieve minimal costs.

cost driver–Syn.: driver (first definition).

cost driver analysis–In activity-based cost accounting, the examination of the impact of cost drivers. The results of this analysis are useful in the continuous improvement of cost, quality, and delivery times.

cost element–An area that generates cost, such as a resource, activity, or cost object.

cost engineer–An engineer whose judgment and experience are used in the application of scientific principles and techniques to problems of cost estimation and cost control in business planning, profitability analysis, project management and production planning, scheduling, and control.

cost equalization point (CEP)–A point or quantity at which the cost curves of two manufacturing methods have an equal value.

cost estimation–1) Specification of the relationship between cost and the underlying cost drivers. 2) In project management, creating an approximation of the resources and associated costs needed to complete a project.

cost management–Control of activities to eliminate waste, improve cost drivers, and plan operations. Product pricing, introduction of new products, and distribution of existing products are examples of strategic decisions that are affected by cost management.

cost object–In activity-based cost accounting, anything for which a separate cost measurement is desirable. This may include a product, customer, project, or other work unit.

cost object driver–In activity-based cost accounting, a numerical measure of the demand placed on one cost object by other cost objects.

cost of capital–The cost of maintaining a dollar of capital invested for a certain period, usually one year. This cost is normally expressed as a percentage and may be based on factors such as the average expected return on alternative investments and current bank interest rate for borrowing.

cost of goods sold (COGS)–An accounting classification for determining the amount of direct materials, direct labor, and allocated overhead associated with the product(s) sold during a given period of time. See: cost of sales.

cost of lost sales–Profit that is foregone because of a stockout situation.

cost of poor quality–The costs associated with performing a task incorrectly and/or generating unacceptable output. These costs would include the costs of nonconformities, inefficient processes, and lost opportunities. See: quality costs.

cost of quality–See: quality costs.

cost of sales–The total cost allocated to units of finished product delivered to customers during the period. See: cost of goods sold (COGS).

cost performance index (CPI)–A measure of project efficiency, calculated as the ratio of earned value (EV) to actual costs.

cost pool–In activity-based cost accounting, an aggregation of resources assigned to activities or activities assigned to cost objects. Items may be aggregated or disaggregated depending on how the data is to be used.

cost reduction–The act of lowering the cost of goods or services by securing a lower price, reducing labor costs, and becoming more efficient. In cost reduction, the item usually is not changed, but the circumstances around which the item is procured or manufactured are changed. By comparison, in value analysis, the item itself is actually changed to produce a lower cost.

cost tradeoff–The advantages and disadvantages of one method over another, such as different means of distribution or providing customer service.

cost variance–The difference between a budgeted or projected cost and actual cost.

cost, insurance, and freight (CIF)–A freight term indicating that the seller is responsible for the cost, the marine insurance, and the freight charges on an ocean shipment of goods.

cost-based contract–A type of purchasing contract in which the price of goods or services is tied to the costs of key inputs or other economic factors such as interest rates.

cost-benefit ratio–A ratio of total measurable benefits to the initial capital cost. This might be used in deciding which projects to pursue in a continuous-improvement effort.

costed bill of material (BOM)–A bill of material (BOM) that shows the cost of material by multiplying the number of each component used in one finished product by the unit price. The cost of all components is then rolled up into a total cost.

cost-plus contract–A contract in which the buyer agrees to pay the seller all the acceptable costs of the product or service up to a maximum cost. Syn.: cost-type contract.

cost-plus-fixed-fee contract–A contract in which the seller is paid for costs specified as allowable in the contract plus a stipulated fixed fee.

cost-plus-incentive-fee contract–A contract in which the seller is paid for costs specified as allowable in the contract plus a bonus, provided certain provisions are met or exceeded.

cost-type contract–Syn.: cost-plus contract.

cost-volume-profit analysis–The study of how profits change with various levels of output and selling price.

COTD–Acronym for complete and on-time delivery.

COTS–Acronym for commercial-off-the-shelf.

Council of Supply Chain Management Professionals (CSCMP)–A not-for-profit worldwide organization of logistics and supply chain professionals. It provides educational opportunities through a variety of activities.

count chart–Syn.: c-Chart.

count frequency–The number of times an item in inventory is counted during a period of time. Generally, high-value items are counted more frequently than low-value items, although properties other than value can influence the frequency. See: cycle counting.

counterpurchase–A reciprocal agreement when an exporter and importer buy goods from each other.

countertrade–Any transaction in which partial or full payment is made with goods instead of money. This often applies in international trade.

counting point–A point in a flow of material or sequence of operations at which parts, subassemblies, or assemblies are counted as being complete. Counting points may be designated at the ends of lines or upon removal from a work center, but most often they are designated as the points at which material transfers from one department to another. Syn.: pay point.

count-per-unit chart–Syn.: U chart.

coupon–A promotional device offering special savings when a product is purchased.

covered hopper–A hopper car with a roof designed to transport bulk commodities that need protection from the elements. See: hopper car.

Cp–A process capability index calculated by dividing the difference between the upper specification limit (USL) and the lower specification limit (LSL) by 6 times the standard deviation (s) or $C_p = \frac{\text{upper specification limit (USL)–lower specification limit (LSL)}}{6s}$

CPFR–Acronym for collaborative planning, forecasting, and replenishment.

CPI–1) Acronym for continuous process improvement. 2) Acronym for cost performance index.

CPIM–1) Acronym for Certified in Planning and Inventory Management. 2) Acronym for Certified in Production and Inventory Management, which is a retired name for CPIM.

CPIM-F–Acronym for Certified in Planning and Inventory Management Fellow.

Cpk–A process capability index that calculates the variability of a process. It is expressed as: $C_{pk} = \frac{\text{(m-nearer specification unit)}}{3s}$ where m is the mean and s is the standard deviation.

CPM–1) Acronym for critical path method. 2) Acronym for Certified Purchasing Manager.

CPOF–Acronym for capacity planning using overall factors.

CPP–Acronym for critical process parameter.

CPU–Acronym for central processing unit.

cradle-to-cradle–A model focused on the design of products such that at the end of their useful lives they can be used as inputs for new products instead of entering the waste stream. See: life cycle assessment (LCA).

crane–Lifting equipment capable of moving items horizontally or vertically by suspending them from above.

crashing–In project management, adding resources to critical path or near-critical path activities on a project to shorten the project duration after analyzing the project to identify the most cost-effective course of action.

credit period–The time allowed to a customer to pay an invoice in full.

crew size–The number of people required to perform an operation. The associated standard time should represent the total time for all crew members to perform the operation.

crew-size standard–A labor estimate of the number of workers necessary to complete the required output for a given shift.

critical activity–Any activity on the critical path of a project. Critical activities have no slack time, meaning any delay in the activity will delay project completion. See: critical path, critical path method (CPM).

critical chain–The longest sequence of dependent events through a project network, considering both technical and resource dependencies in completing the project. The critical chain is the constraint of a project.

critical chain method–A network planning technique for the analysis of a project's completion time that is used for planning and controlling project activities. The critical chain, which determines project duration, is based on technological and resource constraints. Strategic buffering of paths and resources is used to increase project completion success. See: critical chain, critical path method (CPM).

critical characteristic–Syn.: functional requirement.

critical failure–The malfunction of those parts that are essential for continual operation of a machine or product or the safety of the user.

critical mass–The number or size of personnel, customers, etc., necessary for a particular activity, change, or development.

critical path–The longest sequence of activities through a network or project. The critical path determines the planned project duration. See: critical activity, critical path method (CPM).

critical path activity–In project management, any activity on a network's critical path as determined by the critical path method.

critical path lead time–The total lead time of critical path activities. See: cumulative lead time.

critical path method (CPM)–A network planning technique for the analysis of a project's completion time used for planning and controlling the activities in a project. By showing each of these activities and their associated times, the critical path, which identifies those elements that actually constrain the total time for the project, can be determined. See: critical chain method, network analysis, critical activity, critical path.

critical process parameter (CPP)–A key variable or a set of variables in a production process that affects product quality. Focusing on these variables will yield the greatest return on investment in quality control and improvement.

critical process–A process that has a large potential for loss—either money, property, or human life.

critical ratio–A dispatching rule that calculates a priority index number by dividing the time to due date remaining (time remaining) by the expected elapsed time to finish the job (work remaining). For example, A ratio less than 1.0 indicates the job is behind schedule, a ratio greater than 1.0 indicates the job is ahead of schedule, and a ratio of 1.0 indicates the job is on schedule. critical ratio= $\frac{\text{time remaining}}{\text{work remaining}} = \frac{30}{40} = .75$

critical success factor (CSF)–An objective that measures how the organization defines its achievement of its goals. CSFs are determined by management executives and may be financial, environmental, industry-related, or related to other areas that position the organization for success.

critical to quality (CTQ)–The important and measurable traits of a product or process whose performance targets must be met to satisfy the customer. CTQ characteristics impact the perceived value and quality by the customer and drive customer satisfaction.

critical value analysis–A modified ABC analysis in which a subjective metric of the criticality of an item is assigned to each item.

CRM–Acronym for customer relationship management.

Cross Chain Control Center (4C)–A center for the coordination and direction of multiple supply chains to enhance the flow of goods through the exchange of data among different logistics chains to maximize utilization through information, financial, and transportation flows. The result is larger volumes to increase transportation loads, cut costs, and enhance accessibility to more locations.

cross plot–Syn.: scatter chart.

cross-docking–The concept of packing products on incoming shipments so they can be easily sorted at intermediate warehouses or for outgoing shipments based on final destination. The items are carried from the incoming vehicle docking point to the outgoing vehicle docking point without being stored in inventory at the warehouse. Syn.: direct loading. See: inbound staging.

cross-docking warehouse–A warehouse or portion of a warehouse used for cross-docking. See: cross-docking.

cross-functional integration–The collaboration of multiple business functions within an organization to enable the flow of information and work toward common goals. See: integrated enterprise.

cross-functional organization–An organization in which groups of people from different departments work together toward a common goal. See: integrated enterprise.

cross-functional team–A set of individuals from various departments assigned a specific task, such as implementing new computer software. See: core team.

cross-selling–The offering of additional products or services to customers that are complementary to their original purchase.

cross-shipment–The shipment of materials to a customer from a secondary shipping point rather than from a preferred shipping point.

cross-sourcing–Sourcing a product or service in one area of business from one supplier, and using a different supplier in a different area of business for similar products or services. The suppliers can then compete for future business.

cross-subsidization–Assigning too much or too little cost to a cost object. It is often used as a pricing strategy so that the extra profit from one product subsidizes the loss from another product. The company can then offer certain products at lower cost points to attract customers, enter new markets, etc.

cross-training–Providing training or experience in several different areas (e.g., training an employee on several types of equipment). Cross-training enables the ability to use backup workers if the primary operator is unavailable.

crowdsourcing–Leveraging technology and the internet to access a large group of people to collaborate on new product development, ideas, and/or funding.

CRP–Acronym for capacity requirements planning.

CRT–Acronym for current reality tree.

cryptocurrency–A digital asset that uses cryptography to secure its transactions and to verify the transfer of assets. The decentralized control of each cryptocurrency works through a public transaction database (blockchain), functioning as a distributed ledger. Unlike other currencies, it is not tied to a banking system's control. See: blockchain, decentralized computer network, digital currency.

cryptography–The securing of data from unauthorized access through the use of algorithms.

CSCMP–Acronym for Council of Supply Chain Management Professionals.

CSCP–Acronym for Certified Supply Chain Professional.

CSCP-F–Acronym for Certified Supply Chain Professional Fellow.

CSF–Acronym for critical success factor.

CSI–Acronym for container security initiative.

CSM–Acronym for customer service management.

CSR–1) Acronym for corporate social responsibility. 2) Acronym for customer service representative.

CTO–Acronym for configure-to-order.

CTP–Acronym for capable-to-promise.

C-TPAT–Acronym for Customs-Trade Partnership Against Terrorism.

CTQ–Acronym for critical to quality.

CTSC–Acronym for Certified in Transformation for Supply Chain.

cubage–Cubic volume of space being used or available for shipping or storage.

cube rate–1) A rate used to improve warehouse order picker productivity by placing items with smaller total cubic space requirements closer to the shipping area. A larger total number of items can be stored near the shipping area in this way, thereby reducing the aggregate order-picking travel time. 2) A freight rate calculated on cargo volume rather than weight.

cube utilization–A measurement of the utilization of the total storage capacity of a vehicle storage bay, container, type of warehouse equipment, or entire warehouse. The intent is to minimize unused horizontal or vertical space.

cubic space–A measurement of space available or required in transportation and warehousing.

cultural environment–The sociocultural factors of the organization's external environment. It includes values, work ethics, education, religion, and consumer and ecological factors.

cumulative available-to-promise–A calculation based on the available-to-promise (ATP) figure in the master production schedule (MPS). Two methods of computing the cumulative ATP are used: with and without look-ahead calculation. The cumulative with look-ahead ATP equals:
(The ATP from the previous period + The MPS of the period) — (The backlog of the period — The differences between the backlogs and MPSs of all future periods until, but not to include, the period where point production exceeds the backlogs). The cumulative without look-ahead procedure equals:
(The ATP from the previous period + The MPS) — (The backlog in the period being considered). See: available-to-promise (ATP).

cumulative forecast error (CFE)–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.

cumulative lead time–The longest planned length of time to accomplish an activity. It is the sum of the lead time for each bill of material (BOM) path below an item. Whichever path adds up to the greatest number defines cumulative lead time. Syns.: aggregate lead time, combined lead time, composite lead time, stacked lead time. See: critical path lead time, planning horizon, planning time fence.

cumulative manufacturing lead time–The cumulative planned lead time to manufacture an item when all purchased components are assumed to be in stock. Syn.: composite manufacturing lead time.

cumulative sum control chart–A control chart on which the plotted value is the cumulative sum of deviations of successive samples from a target value. The ordinate of each plotted point represents the algebraic sum of the previous ordinate and the most recent deviations from the target.

cumulative trauma disorder–An occupational injury believed to be caused by repetitive motions such as typing or twisting.

cumulative yield–Syns.: cascading yield loss, composite yield.

currency appreciation–An increase in the buying power of a country's currency in terms of other countries' goods and services.

currency depreciation–A decrease in the buying power of a country's currency in terms of other countries' goods and services.

current assets–An accounting or financial term (balance sheet classification of accounts) representing the short-term resources owned by a company, including cash, accounts receivable (AR), and inventories. See: asset, balance sheet.

current cost–1) The current or replacement cost of labor, material, or overhead. Its computation is based on current performance or measurements, and it is used to address today's costs before production as a revision of annual standard costs. 2) An asset's value based on the cost of an identical asset purchased today.

current economic benefit–An accounting term used to define the benefit a company has received with each new service agreement, extended warranty, or other replacement or returns agreement during a specific period of time.

current finish time–In project management, the present estimate of an activity's finish time.

current liabilities–The debts owed by a company and expected to be paid within 12 months. See: liability, balance sheet.

current on-hand alert–An alert in demand-driven material requirements planning (DDMRP) sent to purchasing, planning, and manufacturing personnel denoting that the depletion of on-hand inventory has entered the red zone.

current price–The price currently being paid, as opposed to standard cost.

current ratio–Current assets divided by current liabilities. See: liquidity ratio.

current reality tree (CRT)–A logic-based tool for using cause-and-effect relationships to determine root problems that cause the observed undesirable effects of the system. See: root cause analysis.

current start date–In project management, the present estimate of an activity's start date.

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

custom product–A product that is made to meet the requirements of a specific customer or customers.

custom service–A service that is created to meet the requirements of a specific customer or customers.

customer–1) A person or organization receiving a good, service, or information. See: external customer, internal customer. 2) In project management, every project has a customer who may be internal or external to the organization and who is responsible for the final project acceptance.

customer acquisition–The identifying and converting of potential customers into buyers of an organization's goods or services.

customer centricity–A focus on providing a positive customer experience at every opportunity, from the sale of the product, to the fulfillment and shipping of the product, to any follow-up customer service. See: customer-driven.

customer chain operations reference (CCOR)–Serves as the starting point for process modeling efforts by providing business process management modelers a core set of high-level common business processes for the customer chain and a common language for the exchange of process knowledge and linking sales, operations, and customer-support business processes.

customer contact center–A center that utilizes telephone and web contact services to enable customer contact 24 hours per day.

customer convergence–1) Using various customer-centric marketing channels and techniques to enhance the customer experience. 2) Reducing the difference of product selection within a certain population to position a company brand.

customer coproduction–Involving the customer in certain activities in the delivery of products or services. For example, providing self-checkout as an option for purchasing items.

customer defection analysis–Analyzing the customers who have stopped buying to determine the cause, identify trends, and define actions to prevent further loss.

customer order–An order from a customer for a particular product, number of products, or service. It is often referred to as an actual demand to distinguish it from a forecasted demand. See: booked orders.

customer order cycle time–Syn.: order fulfillment lead time.

customer order promising–Syn.: order promising.

customer partnership–Syn.: customer-supplier partnership.

customer profitability–Estimating the profit achieved from business with a specific customer.

customer relationship management (CRM)–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.

customer relationship management (CRM) system–An enterprise software system used to manage customer relationships, including the management of customer-related data, such as inquiries, quotes, orders, sales, demand forecasts, marketing efforts, and customers' contact information. See: customer relationship management (CRM).

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

customer segmentation–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.

customer service–1) The ability of a company to address the needs, inquiries, and requests of customers. 2) A measure of the delivery of a product to the customer at the time the customer specified.

customer service level–Syns.: customer service ratio, fill rate.

customer service life cycle–The four phases of a customer relationship: requirements, acquisition, ownership, and retirement.

customer service management (CSM)–A process that enables a business to orchestrate tasks among different individuals in order to resolve customer requests or issues.

customer service ratio–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.

customer service representative (CSR)–Personnel assigned to customer relations who answer customer questions, receive customer orders, and provide technical support.

customer share–In marketing, a measurement (usually a percentage) of how many potential customers are attracted to a brand. It is a measurement of the recognition of the brand in the marketplace and the predisposition of the customer to buy the brand when presented with a choice of competing brands.

customer survey–An instrument, such as an interview or questionnaire, designed to collect user data and preferences about product or service characteristics.

customer tolerance time–The amount of time potential customers are willing to wait for the delivery of a good or a service. Syn.: demand lead time.

customer-defined attributes–The characteristics of a good or service that are viewed as being important in addressing the needs of the customer. See: house of quality (HOQ).

customer-driven–Considering customer needs as the primary business strategy, and a culture where personnel work together to meet and exceed customer expectations.

customer-facing–An activity, technology, or person that interacts directly with the customer.

customer-managed inventory–A supply chain replenishment model wherein the customer controls the physical replenishment of spares or parts.

customer-supplier partnership–A long-term relationship between a buyer and a supplier characterized by teamwork and mutual confidence. The supplier is considered an extension of the buyer's organization. The partnership is based on several commitments. The buyer provides long-term contracts and uses fewer suppliers. The supplier implements quality assurance processes so that incoming inspection can be minimized. The supplier also helps the buyer reduce costs and improve product and process designs. Syn.: customer partnership. See: outpartnering.

customized experience–The ability of an organization to leverage its digital supply network to better communicate with, engage, and retain customers across multiple channels, formats, and device types. This capability enables targeted, data-driven actions tailored to customer experiences en masse from transaction to service.

customs broker–An individual or firm that manages the documentation required for international shipping and tracks and moves the shipments through the proper channels. Syn. import broker.

Customs-Trade Partnership Against Terrorism (C-TPAT)–A joint government-business endeavor for imports (not exports) to increase the security of supply chains and U.S. borders. Initiated by U.S. Customs and Border Protection (CBP), C-TPAT involves voluntary cooperation of supply chain participants such as importers, carriers, brokers, warehouse operators, and manufacturers. Participants audit their logistical system security and answer a security questionnaire in exchange for a likely (but not guaranteed) faster customs-clearing process and fewer inspections.

cut-off control–A procedure for synchronizing cycle counting and transaction processing.

cwt–Abbreviation for hundredweight.

cybermarketing–Any type of internet-based promotion. Many marketing managers use the term to refer to any type of computer-based marketing.

cybernetic system–The information flow or information system (electronic, mechanical, or logical) that controls an industrial process.

cybernetics–The study of control processes in mechanical, biological, electrical, and information systems.

cybersecurity–The technology and best practices to protect critical systems and sensitive information from attack, damage, or unauthorized access.

Cybersecurity Framework (CSF)–A voluntary framework developed by the National Institute of Standards and Technology (NIST) to help organizations manage and reduce cybersecurity risks. It provides a structured approach to identifying, protecting against, detecting, responding to, and recovering from cyber threats, enhancing the security and resilience of critical infrastructure.

cycle–1) The interval of time during which a system or process, such as seasonal demand or a manufacturing operation, periodically returns to similar initial conditions. 2) The interval of time during which an event or set of events is completed.

cycle counter–An individual who is assigned to do cycle counting.

cycle counting–An inventory accuracy audit technique in which inventory is counted on a cyclic schedule rather than once a year. A cycle count is usually taken on a regular, defined basis (often more frequently for high-value or fast-moving items and less frequently for low-value or slow-moving items) to identify errors in inventory records quickly and to trigger corrective action. Most effective cycle counting systems require the counting of a certain number of items every workday, with each item counted at a prescribed frequency. See: count frequency, inventory cycle counting.

cycle inventory–Syn.: cycle stock.

cycle service level–The probability of not having a stockout in any one ordering cycle, which begins at the time an order is placed and ends when the goods are placed in stock. Syn.: measure of service. See: service level.

cycle stock–The amount of inventory maintained to fulfill demand during an order cycle. The cycle stock depletes gradually as customer orders are fulfilled and is replenished cyclically when orders from suppliers are received. Syn.: cycle inventory. See: lot-size inventory.

cycle time–1) In industrial engineering, the time between the completion of two discrete units of production. For example, the cycle time of motors assembled at a rate of 120 per hour is 30 seconds. 2) In materials management, the length of time from when material enters a production facility until it exits. Syn.: throughput time.

cyclical component–A component of demand, usually describing the impact of the business cycle on demand. See: time series analysis, time series decomposition.

cyclical demand–Demand influenced by recurring long-term changes (e.g., in the economy) over time.

D

D chart–A control chart for evaluating a process in terms of a demerit (or quality score), such as a weighted sum of counts of various classified nonconformities. Syn.: demerit chart.

DAF–Acronym for demand adjustment factor.

dampeners–User-input parameters to suppress the reporting of insignificant or unimportant action messages.

dark factory–A completely automated production facility with no labor. Syn.: lightless plant.

dashboard–An easy-to-read management tool similar to an automobile's dashboard designed to address a wide range of business objectives by combining business intelligence and data integration infrastructure. See: executive dashboard.

data–Any representations, such as alphabetic or numeric characters, to which meaning can be assigned.

data acquisition–Obtaining data from a source, such as a database, and communicating that data to another database or a data warehouse.

data cleansing–Examining a database or data file to find and fix mistakes, such as misspellings, missing information, data inconsistencies and false data.

data collection–The act of compiling data for recording, analysis, or distribution.

data communication–Transmission of data in a computer-readable form using various transmission vehicles and paths.

data date–The date through which a report has provided actual accomplishment. Syn.: time-now date.

data dictionary–1) A catalog of requirements and specifications for an information system. 2) A file that stores facts about the files and databases for all systems that are currently being used or for the software involved.

data element–A group of characters that defines an item at a basic level.

data file–A collection of related data records organized in a specific manner (e.g., one record for each inventory item showing the product code, unit of measure, production costs, transactions, selling price, and production lead time).

data governance–The overall management of data's accessibility, usability, reliability, and security. It is used to ensure data-record accuracy.

data integrity–The process of assuring that data maintains its accuracy, consistency, completeness, and validity over time.

data lake–A storage repository for large volumes of data from multiple sources, raw or structured, that can then be accessed for reporting and analytics. It differs from a data warehouse, which is used for querying and analyzing specific data, whereas a data lake stores data without a specific purpose to be used later. See: data lakehouse; data warehouse; extract, transform, load (ETL).

data lakehouse–An emerging data architecture that combines a data warehouse's data management capabilities and a data lake's flexibility. See: data lake; data warehouse; extract, transform, load (ETL).

data mining–The process of studying data to search for previously unknown relationships. This knowledge is then applied to achieving specific business goals.

data normalization–A database maintenance term used in the context of relational databases. The strategy helps to minimize the duplication of information or safeguard the database against certain types of logical or structural data anomalies. It is often used when merging data from one or more databases.

data transfer–The movement by electronic means of data from one location to another. The data can take the form of voice, text, image, or other formats. The movement is accomplished by communication links between computers and a variety of input/output devices.

data warehouse–A repository of data that is stored for the specific purpose of querying and analyzing the data to support decision-making. See: data lake; data lakehouse; extract, transform, load (ETL).

database–A data-processing file-management approach designed to establish the independence of computer programs from data files. Redundancy is minimized, and data elements can be added to, or deleted from, the file structure without necessitating changes to existing computer programs.

database management system (DBMS)–The software designed for organizing data and providing the mechanism for storing, maintaining, and retrieving that data on a physical medium (i.e., a database). A DBMS separates data from the application programs and people who use the data and permits many different views of the data.

date code–A label on products with the date of production. In food industries, it is often an integral part of the lot number.

date effectivity–A technique used to identify the effective date of a configuration change. A component change is controlled by the effective date within the bill of material (BOM) for the unchanged parent part number.

days of supply (DOS)–1) Inventory-on-hand metric converted from units to how long the units will last. For example, if there are 2,000 units on hand and the company is using 200 per day, then there are 10 DOS. 2) A financial measure of the value of all inventory in the supply chain divided by the average daily cost of goods sold (COGS) rate.

days outstanding–A term used to imply the amount of an asset or liability measured in days of sales. For example, accounts payable (AP) days are the typical number of days that a firm delays payment of invoices to its suppliers. See: days payable outstanding (DPO), days sales outstanding (DSO).

days payable outstanding (DPO)–A measure of the average number of days a company takes to pay its invoices within a specific accounting time period (such as a quarter or a year). It is measured by dividing the accounts payable (AP) by the cost of goods sold (COGS) in the time period and multiplying that ratio by the number of days in the time period. This metric also is known as average payment period for materials, days purchases in AP, and days outstanding in AP. See: days outstanding.

days sales outstanding (DSO)–A measure of the average number of days a company takes to collect revenue after a sale has been made, calculated as the total accounts receivable (AR) divided by the average daily sales rate. See: days outstanding.

DBMS–Acronym for database management system.

DBR–Acronym for drum-buffer-rope.

DC–Acronym for distribution center.

DCS–Acronym for destination control statement.

DDMRP–Acronym for demand-driven material requirements planning.

DDP–Acronym for distributed data processing.

deadhead–The return of an empty vehicle or transportation equipment to its point of origin without a return load. See: backhauling.

debenture–A bond that is backed by the general credit of the issuing firm.

deblend–The further processing of a product to adjust specific physical and chemical properties to within specification ranges.

debt–An amount owed to creditors. It is generally equal to the total assets in a company less the equity. See: liability.

debt-to-equity ratio–A comparison of a company's total debt to owner's equity. It is used to assess the relative risk of investing in the company.

decentralized authority–The process of dispersing decision-making governance to staff people below the executive level of an organization.

decentralized computer network–A network in which multiple servers offer the various services that other linked computers require instead of just one server to enhance the resilience of the system to failures. See: blockchain, cryptocurrency, client/server system.

decentralized dispatching–The organization of the dispatching function into individual departmental dispatchers.

decentralized inventory control–Inventory decision-making exercised at each stocking location for stock keeping units (SKUs) at that location.

decentralized organizational structure–An organizational structure that manages core processes at the level of individual business groups, units, product segments, and locations. See: centralized organizational structure.

decentralized purchasing–A process in which purchasing decisions are made locally and not at a central location. Ant.: centralized purchasing.

decision matrix–A matrix used by teams to evaluate problems or possible decision alternatives. The alternatives are rated with respect to important criteria, and those ratings are weighted by each criterion's relative importance to determine each alternative's total score. The alternative with the best score is the recommended solution.

decision support system (DSS)–A computer system designed to assist managers in selecting and evaluating courses of action by providing a logical (usually quantitative) analysis of the relevant factors.

decision table–A means of displaying logical conditions in an array that graphically illustrates actions associated with stated conditions.

decision theory–A systematic approach to making decisions, particularly when uncertainty is present.

decision tree–A method of analysis that evaluates alternative decisions in a sequential decision-making scenario using a tree-like structure to estimate payoffs and/or probabilities. Decision trees take into account the time value of future payoffs using a rollback concept. Analysis of payoffs is initiated at the far right-hand side, and expected tradeoffs are traced back through the branches to identify the appropriate decision strategy.

decision variables–The variables that will be changed to find the optimal solution in an optimization problem.

decisions under certainty–Simple decisions that assume complete information and no uncertainty connected with the analysis of decisions.

decisions under risk–Decision problems in which the analyst elects to consider several possible futures, the probabilities of which can be estimated.

decisions under uncertainty–Decisions for which the analyst elects to consider several possible futures, the probabilities of which cannot be estimated.

declared value–The value of goods declared on a bill of lading and used to determine a freight rate or limit the carrier's liability.

declining practice–Practices used for long periods of time that have become obsolete or even harmful to business and supply chain performance.

decoupled explosion–A special form of material requirements planning (MRP) explosion for items in the bill of material (BOM) that are managed using buffers. The MRP explosion for these items occurs when the on-hand balance hits the rebuild zone of its buffer.

decoupled lead time–An amount of lead time maintained between entities in a manufacturing, service or distribution network to create independence between processes or entities. The objective of decoupling lead time is to disconnect the rate of use from the rate of supply.

decoupling–Creating independence between supply and use of material. The process commonly denotes allocating inventory between operations so that fluctuations in the production rate of the supplying operation do not constrain the production or use rates of the next operation.

decoupling inventory–An amount of inventory maintained between entities in a manufacturing or distribution network to create independence between processes or entities. The objective of decoupling inventory is to disconnect the rate of use from the rate of supply of the item. See: buffer.

decoupling points–The locations in the product structure or distribution network where inventory is placed to create independence between processes or entities. Selection of decoupling points is a strategic decision that determines customer lead times and inventory investment. See: control point.

decryption–Transformation of encrypted text into a readable format.

dedicated capacity–A work center or production facility designated to produce a single item or a limited range of similar items. The resources are tailored to efficiently manufacture the designed products, allowing for optimized processes and improved resource utilization. See: dedicated equipment.

dedicated contract carrier–A third-party provider that capitalizes, manages, and operates a private fleet for its customer, giving the customer the benefit of having a private fleet without having to invest the up-front resources to established and operate it.

dedicated equipment–Equipment whose use is restricted to specific operations on a limited set of components. See: dedicated capacity.

dedicated line–A production line permanently configured to run well-defined parts, one piece at a time, from station to station.

deep learning (DL)–A subset of machine learning (ML) that uses deep neural networks for complex decision-making.

de-expedite–The reprioritizing of jobs to a lower level of activity. All extraordinary actions involving these jobs stop.

defect–A good's or service's nonfulfillment of an intended requirement or reasonable expectation for use, including safety considerations. See: blemish, imperfection, nonconformity.

defects per million opportunities–The quantity of defects per one million defect opportunities, which represent important considerations for the customer.

defects per unit–The average number of flaws on a single unit of a particular product (e.g., a television cabinet).

deficiency–Failure to meet quality standards.

define phase–A step in the six sigma define, measure, analyze, improve, control (DMAIC) process in which project goals and customer deliverables are identified.

define, measure, analyze, design, verify (DMADV) process–A six sigma process that outlines the steps needed to create a completely new business process or product at six sigma quality levels.

define, measure, analyze, improve, control (DMAIC) process–A six sigma improvement process composed of five stages: (1) Determine the nature of the problem; (2) Measure existing performance, and commence recording data and facts that offer information about the underlying causes of the problem; (3) Analyze the information to determine the root causes of the problem; (4) Improve the process by effecting solutions to the problem; and (5) Monitor the process until the solutions become ingrained.

degrees of freedom–A statistical term indicating the number of observations in a data set that are able to vary when estimating a parameter. The degrees of freedom define the shape of the probability distribution used to perform a statistical test.

DEI–Acronym for diversity, equity, and inclusion.

dekitting–The removal of accessories or parts kits from a product and returning either the kit or the main product without the kit to the store. Dekitting may also refer to the allowance of the resale of kits or products without their parts kits.

delay inbound supplier shipments–Executing a delay of inbound supplier raw material shipments to reduce raw material costs during scheduled plant closures.

delay reporting–Reporting against the operation status of a manufacturing order on an exception basis when delays are anticipated.

delayed differentiation–Syn.: postponement.

delinquent order–Syn.: past-due order.

deliver in full, on time (DIFOT)–Syn.: on-time in-full (OTIF). See: complete and on-time delivery (COTD).

deliverable–Any unique and verifiable product or result that is needed to complete a process or project.

delivery appointment–The time at which goods are scheduled to arrive at a selected location. See: delivery window.

delivery cycle–Syn.: delivery lead time.

delivery cycle time–The average time associated with delivery processes of a product or service. See: delivery lead time.

delivery lead time–The time from the receipt of a customer order to the delivery of the product. Syn.: delivery cycle.

delivery performance to customer commit date–The percentage of orders that are fulfilled by the date originally committed to the customer.

delivery policy–The company's goal for the time required to ship the product after the receipt of a customer's order.

delivery receipt (DR)–Syn.: proof of delivery (POD).

delivery reliability–A performance criterion that measures how consistently goods and services are delivered on or before the promised time.

delivery retail cycle time–The average cycle time of the processes used to acquire, merchandise, and sell finished goods at a retail store. See: cycle time.

delivery schedule–The required or agreed time or rate of delivery of goods or services purchased for a future period.

delivery speed–A performance criterion that measures how quickly a product or service can be delivered once the demand is identified.

delivery window–A time frame within which goods or services should be delivered. See: delivery appointment.

Delphi method–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.

demand–1) A need for a particular product, component, or service. The demand could come from any number of sources (e.g., a customer order, an interplant requirement, a branch warehouse request for a service part, or the manufacturing of another product). See: booked orders. 2) In economics, the consumer's desire to purchase a good or service and willingness to pay a certain price.

demand adjustment factor (DAF)–A modification to the daily usage of an item for a specific period of time to allow for fluctuations in demand. This is primarily used in demand-driven material requirements planning (DDMRP). See: supply offset, demand-driven material requirements planning (DDMRP).

demand chain–1) A network composed of the enterprises that sell a business's goods or services. 2) The supply chain as seen from the viewpoint of the customer, the entity whose behavior controls the demand by selecting from competing products and services.

demand chain management–A supply chain inventory management approach that concentrates on demand pull rather than supplier push inventory models. See: demand pull.

demand curve–A graphic description of the relationship between price and quantity demanded in a market, assuming that all other factors stay the same. The quantity demanded of a product is displayed on the horizontal axis for an array of different prices displayed on the vertical axis.

demand deposits–Deposits that can be withdrawn on demand or paid to a third party by check.

demand during lead time–The quantity of a product expected to be withdrawn from stock or to be consumed during its replenishment lead time when usage occurs at the forecasted rate. See: expected demand.

demand filter–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.

demand forecast updating–1) Revising demand forecasts by incorporating newly revealed customer information to improve forecast accuracy. 2) One of the causes of the bullwhip effect in supply chains that occurs when a firm in the supply chain bases its demand forecasts on the order history from its immediate customers rather than end-consumer demand.

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

demand lead time–The amount of time potential customers are willing to wait for the delivery of a good or a service. Syn.: customer tolerance time.

demand management–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.

demand manager–A person who assists sales and marketing in the development and maintenance of sales forecasts and reconciles volume and mix variations in the forecast.

demand planning–The process of combining statistical forecasting techniques and judgment to construct demand estimates for products or services (both high and low volume; lumpy and continuous) across the supply chain from the suppliers' raw materials to the consumer's needs. Items can be aggregated by product family, geographical location, product life cycle, etc., to estimate consumer demand for finished products, service parts, and services. Numerous forecasting models are tested and combined with judgment and intelligence from marketing, sales, distributors, warehousing, service parts, and other functions to minimize forecast error. See: demand management.

demand pull–The triggering of material movement to a work center only when that work center is ready to begin the next job. Demand pull shortens or eliminates the queue from in front of a work center, but it can cause a queue at the end of a preceding work center. Demand pull also can occur within a supply chain, in which case it often is called a demand chain. See: demand chain management.

demand rate–A statement of requirements in terms of quantity per unit of time (e.g., hour, day, week, month, etc.).

demand risk–The risk that declining economic activity substantially reduces the demand for a firm's products or services.

demand segmentation–Categorizing demand types into groups that share similar characteristics (e.g., international, government, large customers, seasonal products, etc.). Similar segments can be treated alike in business or capacity planning. See: market segmentation.

demand sensing–The use of real-time data and advanced analytical methods to gain a better understanding of demand behavior and to increase forecast accuracy.

demand shaping–The use of tactics — such as price incentives, advertising, product positioning, product modifications and substitutions or trade programs — to influence customers' purchasing behavior to balance supply and demand more effectively.

demand shifting–Shifting demand to a different period without an increase in overall baseline demand. See: forward buying.

demand time fence (DTF)–1) That point in time inside of which the forecast is no longer included in total demand and projected available inventory calculations. Inside this point, only customer orders are considered. Beyond this point, total demand is a combination of actual orders and forecasts. 2) In some contexts, the DTF may correspond to that point in the future inside which changes to the master schedule must be approved by an authority higher than the master scheduler. Beyond the DTF, the master scheduler may change the master production schedule (MPS) within the limits of established rescheduling rules without the approval of higher authority. See: frozen zone, option overplanning, planning time fence, time fence.

demand uncertainty–The uncertainty or variability in demand as measured by the standard deviation, mean absolute deviation, or variance of forecast errors.

demand visibility–The ability of an upstream supply chain entity to view the undistorted actual customer demand within the requisite time frame to enable effective reaction to fulfill customer requirements.

demand-based order quantity–An order system using forecast or derived demand for one or more future periods (rather than a fixed quantity, as in economic order quantity (EOQ)).

demand-driven material requirements planning (DDMRP)–A method for planning material needs that enables a company to build more closely to actual market requirements.

demand-driven sales and operations planning (DDS&OP)–A process that integrates strategic plans with tactical plans. DDS&OP sets the key parameters of a demand-driven operating model based on business strategy; market intelligence; and key business objectives, including strategic information and requirements.

demand-driven supply network–A network in which a customer purchase initiates real-time information flows through the supply chain that consequently cause movement of product through the network.

demerit chart–Syn.: D chart.

Deming circle–The concept of a continuously rotating wheel of plan-do-check-act (PDCA) used for the continuous improvement of products and processes to improve quality. See: plan-do-check-act (PDCA).

Deming Prize–An award given annually to organizations that have successfully applied company-wide quality control based on statistical quality control (SQC) and will keep up with it in the future. Although the award is named in honor of W. Edwards Deming, its criteria are not specifically related to Deming's teachings. The award process is overseen by the Deming Prize Committee of the Union of Japanese Scientists and Engineers in Tokyo.

Deming's 14 Points–Syn.: 14 Points.

demographic segmentation–In marketing, dividing potential markets by potential customers' characteristics, such as age, gender, income, and education. See: market segmentation.

demographics–The characteristics of a specific population, such as a set of potential customers.

demonstrated capacity–Proven capacity calculated from actual performance data, usually expressed as the average number of items produced multiplied by the standard hours to produce the item. See: maximum demonstrated capacity.

demurrage–1) The carrier charges and fees applied when rail freight cars are retained beyond a specified loading or unloading time. 2) Charges related to the amount of time that filled containers spend within a port terminal beyond the free time offered by the carrier. These charges are designed to limit the storage of containers at the port for an extended time. See: detention, express.

denied party list–A list of organizations that are unauthorized to submit a bid for an activity.

department overhead rate–The overhead rate applied to jobs passing through a department.

departmental stocks–An informal system of holding some stock in a production department. This action is taken as a protection from stockouts in the stockroom or for convenience. However, it results in increased inventory investment and possible degradation of the accuracy of the inventory records.

dependent demand–Demand that is directly related to or derived from the bill-of-material structure for other items 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.

depletion–1) The reduction in the value of a capital asset (usually a natural resource) in the balance sheet and charging this amount as an expense against income for the period. See: capital recovery. 2) The reduction in the amount of an available resource due to consumption rates exceeding replenishment rates.

depreciation–An allocation of the original value of an asset against current income to represent the declining value of the asset as a cost of that time period. Depreciation does not involve a cash payment and instead acts as a tax shield, thereby reducing the company's tax liability. See: capital recovery, depletion, double-declining-balance depreciation, straight-line depreciation, units-of-production depreciation.

derived demand–Demand for component products that arises from the demand for final design products. For example, the demand for steel is derived from the demand for automobiles. See: dependent demand.

description by brand–A method to identify a product or service required. Requesting by brand usually means the product or service provides some advantage over other brands.

description by market grade/industry standard–A method to identify a product or service required when there is a high level of understanding between user and supplier.

description by performance characteristics–A method to identify a product or service by specifying the performance required.

description by specification–A method to identify a product or service required by communicating its characteristics in detail.

descriptive analytics–The use of current and historical data to determine trends and patterns to assist companies in making future decisions. See: diagnostic analytics, predictive analytics, prescriptive analytics.

deseasonalized data–Time series data from which seasonality has been removed, often by dividing by seasonal indices.

design–The conversion of a need or innovation into a product, process, or service that meets both enterprise and customer expectations. The design process consists of translating a set of functional requirements into an operational product, process, or service.

design chain operations reference (DCOR)–A framework that links research and development processes, metrics, performance, best practices, and technology features into a unified structure to support communication among design chain partners and to improve the effectiveness of the extended supply chain.

design changeover flexibility–The capability of the existing production system to accommodate and introduce a large variety of major design changes quickly.

design cycle–The interval of time between the start of the design process of one model and the completion of the design process for the model.

design engineering–The discipline consisting of process engineering and product engineering.

design for disassembly (DFD)–Designing a product so it can be more easily disassembled to minimize value loss at the end of its life, helping to assure materials are supportive of cradle-to-cradle in scope. See: design for remanufacturing.

design for logistics–The design of products that considers all aspects of a product's movement and storage pertaining to manufacturing, packaging, shipping, warehousing, merchandising, and repackaging for returns. The chosen design is intended to control logistics costs, increase customer service levels, facilitate ease of transport, and facilitate ease of shelving within distribution centers (DCs) and stores. Other considerations include environmental impacts and security.

design for maintainability–Syn.: design for service.

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

design for manufacture and assembly (DFMA)–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.

design for manufacturing (DFM)—Taking manufacturing concerns into account when designing a product to enable easy manufacturing, cost effectiveness, and/or a higher standard of quality. See: design for manufacturability (DFM), design for manufacture and assembly (DFMA).

design for quality (DFQ)–A product design approach that uses quality measures to capture the extent to which the design meets the needs of the target market (customer attributes) as well as its actual performance, aesthetics, and cost. See: quality function deployment (QFD), total quality engineering (TQE).

design for remanufacturing–Taking disassembly, update or upgrade, and remanufacturing concerns into account when designing a product to enable easy disassembly or remanufacturing, cost effectiveness, and/or a higher standard of quality. See: design for disassembly (DFD).

design for reverse logistics–Designing products so that their return flow functions better by designing reverse-logistics requirements into the product and its packaging. This is different from designing for logistics, which is more focused on forward supply chain concerns. See: design for logistics.

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

design for six sigma (DFSS)–An approach to designing products, processes, and services that meet customer requirements at six sigma quality levels in a cost-effective manner. These quality levels correspond to approximately 3.4 defects per million opportunities. See: design phase, quality function deployment (QFD), six sigma quality, voice of the customer (VOC).

design for the environment (DFE)–Considering health, safety, and environmental aspects of a product during the design and development phase of product development.

design for the supply chain–Enhancement of a firm's product design in consideration of the issues that will arise in the supply chain, from raw materials to the final stage of the product's life cycle.

design for X (DFX)–Also referred to as design for excellence, DFX is a holistic approach that embeds quality into the design process by ensuring that new products achieve desired outcomes in a manufacturable, maintainable, cost-effective, and high-quality way.

design of experiments (DOE)–1) A process for structuring statistically valid studies in any science. 2) A quality management technique used to evaluate the effect of carefully planned and controlled changes to input process variables on the output variable. The objective is to improve production processes.

design phase–One of the stages of the design for six sigma (DFSS) process that involves developing a prototype product that addresses customer expectations and requirements. The effectiveness of this prototype is evaluated in the subsequent verify phase of DFSS. See: design for six sigma (DFSS).

design review–A technique for evaluating a proposed design to ensure that the design: (1) is supported by adequate materials and materials that are available on a timely basis, (2) will perform successfully during use, (3) can be manufactured at low cost, and (4) is suitable for prompt field maintenance.

design simplification–A process of reducing the number of pieces in a product or machine, eliminating features that are seldom needed, and eliminating steps in the production process.

design-to-order (DTO)–Syn.: engineer-to-order (ETO).

destination control statement (DCS)–A statement required by U.S. export regulations on items that need an export license stating that the goods being exported are traveling to the country listed on all the shipping documents. The DCS should be included on the shipment's commercial invoice.

destructive testing–Inspection that renders the inspected part inoperable.

detail file–A file that contains manufacturing, routing, or specification details.

detailed scheduling–Syn.: operations scheduling.

detention–Carrier charges and fees applied when truck trailers are retained beyond a specified loading or unloading time. See: demurrage, express.

deterioration–Product spoilage, damage to the package, or other damage to the product. This is one of the considerations in inventory carrying cost. See: distressed goods, obsolescence.

deterministic models–Models in which no uncertainty is included (e.g., inventory models without safety stock considerations).

deviation–The difference (usually the absolute difference) between a number and the mean of a set of numbers or between a forecast value and the actual value. See: dispersion, forecast error.

Dewey's reflective thinking–A problem-solving technique with a formal sequence of (1) problem definition, (2) problem analysis, (3) brainstorming solutions, (4) development of proposed solutions, and (5) solution testing and validation.

DFM–1) Acronym for design for manufacturability. 2) Acronym for design for manufacturing.

DFMA–Acronym for design for manufacture and assembly.

DFQ–Acronym for design for quality.

DFSS–Acronym for design for six sigma.

diagnostic analytics–A type of analysis that uses techniques such as probabilities, correlation, or regression analysis to determine the root causes of data points. It looks at a specific problem or occurrence to find causes and effects and answer why something happened. See: descriptive analytics, predictive analytics, prescriptive analytics.

diagnostic journey and remedial journey–A two-phase investigation used by teams to solve chronic quality problems. In the first phase—the diagnostic journey—the team journeys from the symptom of a chronic problem to its cause. In the second phase—the remedial journey—the team journeys from the cause to its remedy.

diagnostic study–A brief investigation of an operation, process, group, or individual to discover causes of operational difficulties or problems for which more detailed remedial studies may be feasible. An appropriate work measurement technique may be used to evaluate alternatives or to locate major areas requiring improvement.

die–A tool designed to cut, form, or mold material into a desired shape.

differentiated marketing–Marketing to different customer segments using a different marketing strategy for each segment.

differentiated oligopoly–A market in which a few companies produce partially differentiated products or services that are marketed within a given geographical area. Differentiation may be based on quality, features, styling, or services offered along with the product.

differentiation strategy–A business strategy that focuses on setting a product or service apart from the competition by focusing on making the product or service unique.

DIFOT–Acronym for deliver in full, on time.

Digital Capabilities Model (DCM) for Supply Networks–A reference model for supply chain professionals to guide the development of digital supply networks. The model is designed in a relational manner to help envision and then build the digitally enabled capabilities required to transform linear supply chains into a set of dynamic networks.

digital contract management–The practice of proactively managing the contract life cycle with visibility at each step, including authoring and contract negotiations, to realize cost savings and achieve desired performance levels.

digital currency–An electronic equivalent of physical currency. See: cryptocurrency.

digital development–The ability to capitalize on the digital convergence and rethink how products and services are developed and managed. It enables synchronized digital and physical platforms, real-time collaboration, and product intelligence to enhance the customer experience.

digital packaging on demand–The practice of digitally printing and cutting packaging to create custom product packaging based on customer desires and product requirements.

digital supply chain–The use of digital technology and content to improve supply chain performance, such as computers and other connected devices, the internet of things (IoT), and related sensors and digital content. For example, real-time monitoring of equipment can allow companies to proactively schedule maintenance or replace parts.

digital supply network–Digital supply networks integrate physical and digital channels to establish digital records, facilitate the continuous flow of information, and generate advanced data and analytics for informed supply chain decision-making.

digital transformation–The creation of new business processes or the enhancement of existing business processes through the adoption of digital technologies to improve internal and external coordination of operations and to provide increased customer value.

digital twin–An exact virtual replica or model of a real-world process, product, or service used to digitally simulate, test, model, and monitor it. See: supply chain control tower.

digitalization–The automation of processes via digital technologies.

digitization–The transformation of information from analog into digital format.

dimensions of quality–An aspect of quality that is specified to enhance the ability to define quality. Examples of dimensions of quality for products include aesthetics, conformance, durability, features, perceived quality, performance, reliability, and serviceability. Examples of dimensions of quality for services include assurance, availability, completeness, empathy, pleasantness, professionalism, responsiveness, service reliability, tangibles, and timeliness.

direct costing–Syn.: variable costing.

direct costs–1) In traditional cost accounting, variable costs that can be directly attributed to a particular job or operation. Direct material and direct labor are traditionally considered direct costs. 2) In activity-based cost (ABC) accounting, a cost that can specifically be traced and is economically feasible to track to a particular cost object (e.g., the units produced, a production line, a department, a manufacturing plant).

direct delivery–The consignment of goods directly from the supplier to the buyer. This method is frequently used when a third party acts as an intermediary between the supplier and buyer. See: direct to customer (D2C), drop shipping.

direct labor–Labor that is specifically applied to the good being manufactured or used in the performance of the service. Syn.: touch labor.

direct labor cost–The compensation of workers who are involved in converting material into a finished product.

direct loading–Syn.: cross-docking.

direct marketing–Communicating directly with consumers in an effort to elicit a response or a transaction.

direct material–Material that becomes a part of the final product in measurable quantities.

direct material cost–The acquisition cost of all materials used directly in the production of the finished product.

direct numerical control (DNC)–A system in which sets of numerical control machines are connected to a computer, allowing direct control of machines by the computer without use of external storage media. See: distributed numerical control.

direct offset–Similar to bartering, trading goods or services for related goods or services or agreeing on coproduction.

direct procurement–The sourcing or supply for a product, material, or service that is directly related to the organization's core operations. An example is acquisition of the raw materials used to produce a product. Ant.: indirect procurement.

direct sales–Sales from the manufacturer to the ultimate consumer without going through a distributor or retailer.

direct shipment–Shipment made without any additional stops, such as for loading or changing vehicles. See: drop shipping.

direct store delivery (DSD)–A shipment that bypasses the customer's warehouse and goes directly from the manufacturer's plant to the retail store.

direct to customer (D2C)–A dedicated fulfillment method in which customer orders are shipped from the supplier distribution center (DC) directly to the customer. This allows retailers to offer more choices on internet sites than at retail stores. See: direct delivery.

direct-deduct inventory transaction processing–A method of inventory accounting that decreases the recorded inventory of an item as material is issued from stock and increases the recorded inventory to reflect receipts of material. The inventory record is updated simultaneously with the movement of material out of or into stock. As a result, the record is an accurate representation of the amount physically in stock. Syn.: discrete issue.

direct-ship purchase order–See: direct to customer (D2C).

disadvantaged business entity (DBE)–For-profit small businesses where socially and economically disadvantaged individuals own at least 51 percent interest and control daily business operations. Specific DBE's include minority-owned, women-owned, service-disabled, and veteran-owned organizations.

disassembly bill of material (BOM)–In remanufacturing, a BOM used as a guide for the inspection in the teardown and inspection process. On the basis of inspection, this bill is modified to a bill of repair defining the actual repair materials and work required. Syn.: teardown bill of material (BOM). See: repair bill of material (BOM).

disbursement–The physical issuance and reporting of the movement of raw material, components, or other inventory from a stocking location.

disbursement list–Syn.: picking list.

disciplinary action–An action taken to enforce compliance with organizational rules and policies.

discontinuous demand–A demand pattern that is characterized by large demands interrupted by periods with no demand, as opposed to a continuous or steady (e.g., daily) demand. See: lumpy demand.

discount period–The time allowed a customer to receive a cash discount for timely payment of an invoice.

discount rate–1) The rate of interest charged to commercial banks by a central banking authority. 2) The interest rate used to determine the present value of expected future cash flows from a project or investment. See: interest rate, present value, time value of money.

discounted cash flow–A method of investment analysis utilizing the time value of money in which estimated future cash flows are converted (i.e., discounted) to their value at the present time. See: net present value (NPV), present value, time value of money.

discrete available-to-promise–A method of determining the available-to-promise (ATP) quantities in the master production schedule (MPS). For the first period, the ATP is the sum of the beginning inventory plus the MPS quantity minus backlog for all periods until the item is master scheduled again. For all other periods, if a quantity has been scheduled for that time period, then the ATP is this quantity minus all customer commitments for this and other periods until another quantity is scheduled in the MPS. For those periods when the quantity scheduled is zero, the ATP is zero (even if deliveries have been promised). The promised customer commitments are accumulated and shown in the period when the item was most recently scheduled. Syn.: incremental available-to-promise. See: available-to-promise (ATP).

discrete issue–Syn.: direct-deduct inventory transaction processing.

discrete manufacturing–The production of distinct items such as automobiles, appliances, or computers. See: repetitive manufacturing.

discrete order picking–A method of picking orders in which the items on one order are picked before the next order is picked. See: batch picking, order picking, zone picking.

discrete order quantity–An order quantity that represents an integer number of periods of demand. Most material requirements planning (MRP) systems employ discrete order quantities. See: fixed-period requirements, least total cost, least unit cost, lot-for-lot (L4L), part period balancing (PPB), period order quantity (POQ), Wagner-Whitin algorithm.

discrete purchase order–A single purchase order to buy goods or services. See: purchase order.

discrete variable–A variable, such as number of defects, that can take on only certain values (such as integers). See: continuous variable.

diseconomies of scale–Occurs when more outputs are required than the efficient quantity the facility is designed to produce. It causes an increase in unit cost as the output increases. Ant.: economies of scale.

disintermediation–The process of eliminating an intermediate stage or echelon in a supply chain with the goal of reducing total supply chain operating expenses, total supply chain inventory, and/or total cycle time to increase the profitability of the remaining echelons. See: echelon.

dispatch board–A visual depiction of orders or shipment to be dispatched. See: control board.

dispatch list–A list of manufacturing orders in priority sequence containing detailed information about priority, location, quantity, and the capacity requirements of the manufacturing order by operation. Dispatch lists are normally generated daily and oriented by work center. Syns.: priority report, work center schedule.

dispatcher–1) Production control personnel whose primary function is sequencing available jobs at workstations and assigning jobs to workers. 2) Transportation personnel who send out and track cars, trucks, railcars, and other vehicles to facilitate the movement of freight.

dispatching–1) Selecting and sequencing available jobs to be run at individual workstations and assigning those jobs to workers. 2) Planning and controlling the movement of goods to satisfy customer requirements, including assigning shipments to specific vehicles and drivers and monitoring the status of shipments in transit.

dispatching rule–The logic used to assign priorities to jobs at a work center. See: job sequencing rule, longest-task-time (LTT) rule.

dispersion–The extent to which observations in a data set or distribution are spread out relative to the average value. See: deviation, range, standard deviation.

dispute resolution–The process of arbitration or mediation to settle disagreements without going to court.

distinctive competency–A sustainable advantage that a company has over its competitors.

distressed goods–Products that are damaged or close to their expiration date and cannot be sold at full price. See: deterioration.

distributed data processing (DDP)–A data-processing organizational concept under which computer resources of a company are installed at more than one location with appropriate communication links. Processing is performed at the user's location generally on a smaller computer and under the user's control and scheduling, as opposed to processing for all users being done on a large, centralized computer system.

distributed inventory–Maintaining inventory in a variety of locations to provide better customer service.

distributed ledger technology (DLT)–A consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions. There is no central administrator or centralized data storage. See: blockchain.

distributed manufacturing–A strategy for manufacturing or producing goods at geographically dispersed locations.

distributed numerical control–An approach to automated machining in which each machine tool has its own dedicated microcomputer or computer numerical control (CNC). Each machine tool's CNC is connected via a network with a minicomputer that handles distributed processing between the host mainframe computer and the CNC. This minicomputer handles part program transfers and machine status data collection. This approach is considered more advanced than direct numerical control (DNC), in which several machine tools are tied directly to a central computer. See: direct numerical control (DNC).

distributed order management–The practice of overseeing the shipment of materials and finished goods from multiple distribution points or suppliers to customer locations to reduce lead times, lower the cost of transportation, and meet non-forecasted demand by providing multiple delivery options to the planner. See: omnichannel order fulfillment.

distributed systems–Computer systems in multiple locations throughout an organization that work together in a cooperative fashion. The system at each location primarily serves the needs of that location but also is able to receive and supply information from other systems within a network.

distribution–The activities associated with the movement of material, usually finished goods or service parts, from the manufacturer to the customer. These activities encompass the functions of transportation, warehousing, inventory control, materials handling, order administration, site and location analysis, industrial packaging, data processing, and the communications network necessary for effective management. It includes all activities related to physical distribution as well as the return of goods to the manufacturer. In many cases, this movement is made through one or more levels of field warehouses. Syn.: physical distribution.

distribution by value–Syn.: ABC classification.

distribution center (DC)–Typically a finished goods warehouse designed for demand-driven rapid distribution to retailers (retail DCs), wholesalers, or direct shipments to customers (order fulfillment centers). Cross-docking warehouses are another type of DC. See: cross-docking.

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

distribution cost–Those items of cost related to the activities associated with the movement and storage of finished products. Distribution costs can include inventory costs, transportation costs, and order-processing costs.

distribution curve–A graphic display of numerous data points showing the frequency of occurrences of specific values.

distribution inventory–Inventory, usually spare parts and finished goods, located in the distribution system (e.g., in warehouses or in transit between warehouses and the consumer).

distribution network–The planned channels of inventory disbursement from one or more sources to distribution warehouses and ultimately to the customer. There may be one or more levels in the distribution network. Syn.: bill of distribution. See: distribution system.

distribution of forecast errors–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.

distribution planner–A person who plans inventories and schedules replenishment shipments for the distribution centers (DCs).

distribution planning–The planning activities associated with transportation, warehousing, inventory levels, materials handling, order administration, site and location planning, industrial packaging, data processing, and communications networks to support distribution.

distribution requirements planning (DRP)–The function of determining the need to replenish inventory at branch warehouses. A time-phased order point approach often is used when the planned orders at the branch warehouse level are "exploded" via material requirements planning (MRP) logic to become gross requirements of the supplying source. In the case of multilevel distribution networks, this explosion process can continue down through the various levels of regional warehouses (e.g., master warehouse, factory warehouse, etc.) and become input to the master production schedule (MPS).

distribution resource planning (DRP II)–The extension of distribution requirements planning (DRP) into the planning of the key resources contained in a distribution system (warehouse space, workforce, money, trucks, freight cars, etc.).

distribution system–A group of interrelated facilities—manufacturing and one or more levels of warehousing—linking the production, storage, and consumption activities for spare parts and finished goods inventory. See: distribution network.

distribution warehouse–A facility where goods are received in large-volume uniform lots, stored briefly, and then broken down into smaller orders of different items required by the customer. This type of facility emphasizes expeditious movement and handling of goods. See: third-party logistics (3PL), fourth-party logistics (4PL).

distributor–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. Syn.: wholesaler.

divergent point–An operation in a production process in which a single material or component enters and, after processing, can then be routed to a number of different downstream operations.

diversification strategy–An expansion of the scope of the product line to exploit new markets. A key objective of a diversification strategy is to spread the company's risk over several product lines in case there should be a downturn in any one product's market.

diversity, equity, and inclusion (DEI)–Core values for organizations to accept individuals of various backgrounds, including different genders, races, ethnicities, sexual orientations, and religious backgrounds. This may also be referred to as DEIB (diversity, equity, inclusion, and belonging). See: inclusive procurement.

dividend–A distribution of a firm's earnings paid to its shareholders in the form of cash or stock.

dividend yield–The ratio of the annual dividend per share to the stock price per share.

DL–Acronym for deep learning.

DMADV–Acronym for define, measure, analyze, design, verify.

DMAIC–Acronym for define, measure, analyze, improve, control.

DNC–Acronym for direct numerical control.

dock receipt–A receipt recorded for a shipment received or delivered at a pier or dock.

dock-to-stock–A program through which specific quality and packaging requirements are met before the product is released. Prequalified product is shipped directly into the customer's inventory. Dock-to-stock eliminates the costly handling of components, specifically in receiving and inspection, and enables product to move directly into production. Syn.: ship-to-stock.

dock-to-stock inventory–A supplier-customer relationship in which specified quality and packaging requirements are met before the product is released. The product is then received directly into the customer's inventories. See: point-of-use inventory, stockless purchasing.

dock-to-stock time–Syn.: put-away time.

document management system–A system that uses computer software to track and store electronic documents or images of paper documents.

documentation accuracy–The percentage of orders that are on time and contain accurate documentation supporting the order

Dodge-Romig tables–Information that guides plans for acceptance sampling in quality control based on the sample size and the maximum defective quantity in a sample to satisfy lot acceptance criteria.

DOE–Acronym for design of experiments.

dog–A slang term used to refer to a low-growth, low-market-share product. See: growth-share matrix.

domestic corporation–A company that conducts business within the state or country in which it is incorporated.

DOS–Acronym for days of supply.

double materiality–A concept used by the European Union that provides criteria for reporting an organization's sustainability measures both in financial terms as well as through their impact on the environment and society.

double order point system–A distribution inventory management system that has two order points. The first is the original order point (the smaller of the two), which covers demand during the replenishment lead time. The second order point is the sum of the first order point plus normal usage during the manufacturing lead time. This system enables warehouses to inform manufacturing of future replenishment orders.

double sampling plan–A quality control approach that analyzes an initial sample to determine whether it meets a high threshold for acceptance or a low threshold for rejection. If the sample exceeds the high threshold, the sample is accepted, and no further sampling occurs. If the sample does not satisfy the minimum threshold, the sample is rejected, and no further sampling occurs. If the sample falls within the acceptance and rejection thresholds, a second sample is taken, and results from both samples are used to make the accept or reject decision.

double exponential smoothing–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.

double-declining-balance depreciation–A type of accelerated depreciation. See: depreciation.

downgrade–The substitution of a product of lower quality, value, or status for another, either in planning or in fact.

downside adaptability–The reduction sustainable at 30 days prior to delivery with no inventory or cost penalties. For Source, this is raw material quantity. For Transform, this is production reduction. For Fulfill, this is the delivered quantities.

downside supply chain adaptability–A discrete measurement of the reduction in quantities ordered sustainable at 30 days prior to delivery with no inventory or cost penalties.

downstream–Used as a relative reference within a firm or supply chain to indicate moving in the direction of the end customer. Ant.: upstream.

downstream operation–The tasks subsequent to the task currently being planned or executed.

downtime–Time when a resource is scheduled for operation but is not producing for reasons such as maintenance, repair, or setup.

DR–Acronym for delivery receipt.

draft–A promissory note that an importer uses to formally acknowledge its debt to an exporter. Syn.: bill of exchange.

drawback–A refund of customs duties paid on material imported and later exported. Syn.: duty drawback.

drayage–In the shipping industry, the movement of goods over a short distance, such as from a port to warehouse storage.

drayage carrier–A specialized short-haul carrier that transports intermodal containers from their origin point to rail or ocean terminals or from these terminals to their final destination.

driver–1) In activity-based cost accounting, an operation that influences the quantity of work required and the cost of an activity. Syn.: cost driver. 2) In theory of constraints, an underlying cause that is responsible for several observed effects. 3) In transportation, the person who operates a motor vehicle.

drop and hook trucking–The scenario where a driver drops off a full trailer at a facility and hooks the truck to a different trailer that is already loaded without having to wait for loading or unloading. Ant.: live load.

drop shipping–A practice in which a direct supplier transfers customer orders and shipment details to an upstream supplier who then ships the goods directly to the customer. See: direct delivery, direct shipment.

drop-dead date–The last possible date to influence a future activity.

DRP–Acronym for distribution requirements planning.

DRP II–Acronym for distribution resource planning.

drum–In theory of constraints, the constraint is viewed as a drum, and non-constraints are like soldiers in an army who march in unison to the drumbeat. The resources in a plant should perform in unison with the drumbeat set by the constraint.

drum schedule–The detailed production schedule for a resource that sets the pace for the entire system. The drum schedule must reconcile the customer requirements with the system's constraint(s).

drum-buffer-rope (DBR)–The theory of constraints method for scheduling and managing operations that have an internal constraint or capacity-constrained resource.

dry port–An intermodal terminal connected by road or rail to a nearby seaport that acts as a transshipment point for containerized shipments to reduce supply chain bottlenecks and port congestion by utilizing cheaper, more abundant storage space located inland from the port.

DSD–Acronym for direct store delivery.

DSS–Acronym for decision support system.

DTF–Acronym for demand time fence.

dual sourcing–A method for sourcing requirements by using a few suppliers for the same products or services. See: multisourcing, multiple sourcing, single sourcing.

dual-card kanban system–Syn.: two-card kanban system.

due date–The date when purchased material or production material is due to be available for use. Syn.: expected receipt date. See: arrival date.

due date rule–Syn.: earliest due date (EDD).

dummy activity–In activity-on-arrow diagramming, an activity with zero duration used to express a precedence relationship that can't otherwise be diagrammed. It is shown graphically with a dashed arrow.

dumping–Selling goods below costs in selected markets.

dunnage–The packing material used to protect a product from damage during transport. Some industries use the term to refer specifically to returnable packaging only.

durability–1) A measurement of time or amount of use before a product needs repair or replacement. 2) One of the eight dimensions of quality that refers to the length of a product's economic life.

durable goods–Any goods whose continuous serviceability is likely to exceed three years (e.g., trucks, furniture). See: consumer durable goods.

duration–In project management, the estimated length of time required by an activity.

duty–A tax levied by a government on the importation, exportation, or use and consumption of goods.

duty drawback–Syn.: drawback.

duty paid warehouse–A facility that stores imported goods for which applicable customs duties and taxes have been paid. These goods are now considered to be a part of the domestic market and may be sold or used freely. See: bonded warehouse, public warehouse.

duty-free zone–See: foreign/free trade zone (FTZ).

dwell–The duration of time between when cargo arrives in a terminal's in-transit storage area and when it is shipped out by clearance transportation.

dynamic bill of material (BOM)–A bill of material (BOM) generated for a configurable product after its characteristics have been finalized. See: modular bill of material (BOM), super bill of material (BOM).

dynamic buffer–A buffer whose target stock levels are adjusted based on changes in the behavior of in-stock inventory levels.

dynamic congruence–In simulation, the situation where a physical system and a simulation model mimic one another closely

dynamic demand–A demand pattern that changes over time, affected by trend, seasonality, or random variation. Ant.: stable demand.

dynamic fulfillment–An interconnected cross-enterprise system that enhances the customer experience by getting the right product or service to the right customer or node at the right time and in the right quantity, quality, and condition. This system provides supply networks with the desired levels of logistics visibility, responsiveness, scalability, and flexibility through the application of leading practices, empowering technologies, and cross-functional collaboration.

dynamic inventory management–1) The real-time collection of point-of-sale and inventory data at the item level from each retail and storage point in order to inform production and inventory decisions. 2) The branch of business management concerned with planning and controlling inventories at all levels, horizons, and time fences.

dynamic kanban–An electronic signal using kanban to create an automatic purchase order to a supplier or a manufacturing order to a shop. Dynamic kanban is one of the elements of a manufacturing execution system that enables just-in-time (JIT) deliveries to the production floor. See: kanban.

dynamic lot sizing–Any lot-sizing technique that creates an order quantity subject to continuous recomputation. See: least total cost, least unit cost, part period balancing (PPB), period order quantity (POQ), Wagner-Whitin algorithm.

dynamic programming–A method for analyzing sequential decision-making scenarios that divides the multistage decision structure into a series of single-stage problems that can be solved sequentially to determine the overall optimal strategy for the multistage situation. Dynamic programming methods often utilize backward induction where the last stage is analyzed first, and then the previous stage is sequentially incorporated and analyzed until the optimal policy for entire multistage scenario is developed.

dynamic routing–A networking technique that enables routers to select paths according to real-time logical network layout changes.

E

E2E–Abbreviation for end-to-end.

EAC–Acronym for estimate at completion.

earliest due date (EDD)–A dispatching rule that sequences the jobs at a work center according to their order due dates. See: due date rule, earliest operation due date (ODD), first-come-first-served (FCFS) rule, shortest processing time (SPT) rule.

earliest operation due date (ODD)–A dispatching rule that sequences the jobs at a work center according to the earliest due date for the impending operation. See: earliest due date (EDD), first-come-first-served (FCFS) rule, shortest processing time (SPT) rule.

earliest start date–The earliest date an operation or order can start. It may be restricted by the current date, material availability, the completion of predecessor operations, or a management-specified maximum advance date.

earliness–If a job is finished before its due date, the difference between its completion date and the due date. See: lateness, tardiness.

early finish date (EF)–In the critical path method of project management, the earliest time at which a given activity is estimated to be completed. This date can change as the project is executed.

early manufacturing involvement–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.

early start date (ES)–In the critical path method (CPM) of project management, the earliest possible time at which a given activity can begin. This date can change as the project progresses.

early supplier involvement (ESI)–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.

earned hours–The amount of standard hours assigned to a quantity produced in a certain time period in order to measure manufacturing productivity. Syn.: earned volume.

earned value (EV)–In project management, the total value of the work performed as compared with the authorized budget.

earned value management (EVM)–In project management, a comparison of planned activity time and cost with actual activity time and cost to measure and assess project performance to the planned schedule and budget.

earned volume–Syn.: earned hours.

earnings before interest and taxes (EBIT)–Syn.: net operating income.

earnings before taxes–Earnings before interest and taxes minus interest charges.

EBIT–Acronym for earnings before interest and taxes.

EBPP–Acronym for electronic bill presentment and payment.

e-business–Abbreviation for electronic business, which is conducting business processes via the internet. See: e-commerce.

e-catalog–A digital version of a company's product catalog, which may sometimes be used for purchasing electronically. See: e-procurement.

echelon–A level of supply chain nodes, such as factories, warehouses, and retail stores. Each echelon adds operating expense, holds inventory, adds to the cycle time, and expects to make a profit. See: disintermediation.

ECN–Acronym for engineering change notice.

e-commerce–Abbreviation for electronic commerce.

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

econometric modeling–The process of developing econometric models. See: econometric model.

economic indicator–An index of total business activities at the regional, national, and global levels, which is used to measure the health of an economy.

economic infrastructure–A nation's or region's physical and institutional systems that support economic activities and commerce, including transportation networks, communications systems, financial institutions, and energy and utility supplies.

economic life–The expected time for a product or asset to remain financially useful. This may be different than the actual physical usefulness of the product.

economic lot size–Syn.: economic order quantity (EOQ).

economic order quantity (EOQ)–A type of fixed order quantity (FOQ) model that determines the amount of an item to be purchased or manufactured at one time. The intent is to minimize the combined costs of acquiring and carrying inventory. The basic formula is:

$$\text{quantity} = \sqrt{\frac{2AS}{iC}}$$

where A = annual usage in units, S = ordering costs in dollars, i = annual inventory carrying cost rate as a decimal, and C = unit cost. Syns.: economic lot size, minimum cost order quantity. See: total cost curve.

economic value added–In managerial accounting, the net operating profit earned above the cost of capital for a profit center.

economies of scale–The unit cost reduction that results from spreading fixed costs over higher production or activity volumes. Economies of scale are typically captured as firms expand their markets and operations. See: economies of scope. Ant.: diseconomies of scale.

economies of scope–Using one versatile plant to produce many different products at a lower cost than making each product in different plants at a higher cost. See: economies of scale.

ECR–Acronym for efficient consumer response.

EDD–Acronym for earliest due date.

edge computing–Computing and storage devices that are placed in close proximity to where the information produced will be used and where there is capability for communication with the internet or the cloud.

EDI–Acronym for electronic data interchange.

EDI For Administration, Commerce, and Transport (EDIFACT)–The global standard for the format of documents exchanged by electronic data interchange (EDI).

EDIFACT–Acronym for Electronic Data Interchange for Administration, Commerce, and Transport.

EDLP–Acronym for everyday low pricing.

EDR–Acronym for endpoint detection and response.

edutainment–Mixing entertainment and educational elements to make learning more fun.

EEO–Acronym for equal employment opportunity.

EEOC–Acronym for Equal Employment Opportunity Commission.

EF–Acronym for early finish date.

effective capacity–Syn.: rated capacity.

effective date–The date on which a component or an operation is to be added or removed from a bill of material (BOM) or an assembly process. The effective dates are used in the explosion process to create demands for the correct items. Normally, bills of material and routing systems provide for an effectivity start date and stop date. Effectivity control also may be by serial number rather than date. Syns.: effectivity, effectivity date.

effective interest rate–Syn.: annual percentage rate.

effectivity–Syn.: effective date.

effectivity date–Syn.: effective date.

efficiency–A measurement (usually expressed as a percentage) of the actual output relative to the standard output expected. Efficiency measures how well something is performing relative to existing standards; in contrast, productivity measures output relative to a specific input (e.g., tons per labor hour). Efficiency is the ratio of (1) actual units produced to the standard rate of production expected in a time period, (2) standard hours produced to actual hours worked (taking longer means less efficiency), or (3) actual dollar volume of output to a standard dollar volume in a time period.

efficiency variance–In cost accounting, the difference between the actual volume of a resource used and the budgeted volume multiplied by the budgeted or standard price.

efficient consumer response (ECR)–A supply chain strategy for improving communication and collaboration between suppliers and retailers by using point-of-sale and other real-time data for replenishment.

e-form–Abbreviation for electronic form.

EFT–Acronym for electronic funds transfer.

EI–Acronym for employee involvement.

EIPP–Acronym for electronic invoice presentment and payment.

EIS–Acronym for executive information system.

elasticity of demand (supply)–The measurement of the change in the quantity of demand for a product as a result of a change in the price. If a price change causes a large change in quantity demanded, the demand is said to be elastic. If a price change creates a small change in quantity demanded, demand is inelastic.

ELD–Acronym for electronic logging device.

e-learning–Training or instruction administered online.

electronic bill presentment and payment (EBPP)–A system that provides the ability for companies to send bills and receive payments electronically within a business-to-consumer (B2C) environment.

electronic commerce (e-commerce)–The use of computer and telecommunication technologies to conduct business via electronic transfer of data, documents, and funds. See: electronic market.

electronic commerce application–A digital platform or system that enables business transactions between organizations or individuals over the internet. It enables activities such as online sales, payments, supply chain management, and customer interactions through secure electronic communication.

electronic communities–Groups who communicate, share information, and build relationships primarily through digital platforms, such as social media, forums, or online collaboration tools, rather than face-to-face.

electronic data interchange (EDI)–The paperless (electronic) exchange of trading documents, such as purchase orders, shipment authorizations, advanced shipping notices (ASNs), and invoices, using standardized document formats.

electronic document–The electronic version of a document that may or may not also be printed.

electronic export information (EEI)–An electronic declaration of goods leaving the United States for export to a foreign country.

electronic form–An electronic version of a paper form. These forms eliminate the cost of printing, storing, and distributing paper forms.

electronic funds transfer (EFT)–The processing of financial transactions and information about these transactions between two parties via the internet.

electronic invoice presentment and payment (EIPP)–A system that enables the acceptance and transmission of invoices and payments over the internet in a business-to-business (B2B) environment.

electronic logging device (ELD)–Hardware connected to the engine of a commercial vehicle that automatically records the driving time to ensure the driver's compliance with hours of service (HOS) restrictions. The device can also track additional driver information, such as speed, weight, and location. See: log book.

electronic market–An internet-based marketplace that allows buyers and sellers to trade electronically. See: electronic commerce (e-commerce).

electronic product code (EPC)–A common format for encoding identifiers on radio frequency identification (RFID) tags. The EPC is a globally unique number that identifies a specific item in the supply chain, such as a container, pallet, case, or individual unit.

electronic product information (ePI)–Digital information about a product, which includes detailed descriptions, specifications, and other relevant information about products. It is most often used in the medical industry to provide up-to-date information about medicines for patients.

electronic publishing–The digital publication of text and multimedia, such as e-books, digital magazines, and audio recordings.

electronic returns tracking–The practice of using electronic systems to track the locations of returns within the supply chain.

electronic signature–An authentication that validates a transaction by means of a digital authorization code to identify an individual or group.

embargo–A ban established by a nation's government that prohibits individuals or organizations from conducting any trade with individuals or organizations from another particular nation.

embed specialized services–The practice of adding additional on-site capabilities, processes, and expertise by contracting with a third party.

embezzlement–The fraudulent taking of another's property while acting in a fiduciary capacity.

EMC–Acronym for export management company.

emerging practice–The introduction of new technology, knowledge, or significantly different methods of organizing processes.

emissions credit–Compensation to an organization for either reducing greenhouse gas (GHG) emissions or for funding projects intended to improve the environment, such as renewable energy or forest conservation. This funding can be in the form of credits purchased on an exchange to meet compliance legislation, cap and trade systems, or as a voluntary effort. Also known as carbon offset credit.

empathy–A dimension of service quality referring to caring, individualized attention from a service firm.

empirical–Pertaining to a statement or formula based upon experience or observation rather than on deduction or theory.

employee empowerment–The practice of giving non-managerial employees the responsibility and power to make decisions regarding their jobs or tasks. It is associated with the practice of transfer of managerial responsibility to the employee. Empowerment allows the employee to take on responsibility for tasks normally associated with staff specialists. Examples include allowing the employee to make scheduling, quality, process design, or purchasing decisions. See: participative management.

employee involvement (EI)–The concept of using the experience, creative energy, and intelligence of all employees by treating them with respect, keeping them informed, and including them and their ideas in decision-making processes appropriate to their areas of expertise. Employee involvement focuses on quality and productivity improvements. Syn.: people involvement.

empowerment–A condition whereby employees have the authority to make decisions and take action in their work areas without prior approval. For example, an operator can stop a production process if a problem is detected, or a customer service representative can send out a replacement product if a customer calls with a problem.

EMS–Acronym for event management system.

en route–A term describing goods in transit from one location to another.

encryption–Changing readable words into another form, called a cipher, which hides the text's meaning. The encrypted text can only be accessed by authorized individuals or applications.

end product–Syn.: end-item.

end user–1) The final consumer of a product. 2) The operator or recipient of an output from a computer application.

ending inventory–A statement of on-hand quantities or the dollar value of a stock keeping unit (SKU) at the end of a period, often determined by a physical inventory.

end-item–1) A product sold as a completed item or repair part. 2) Any item subject to a customer order or sales forecast. Syns.: end product, finished good, finished product. See: good.

end-of-life product management–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.

end-of-life-inventory–Inventory kept on hand to satisfy demand for products that are no longer being manufactured or actively sold.

endogenous variable–A variable whose value is determined by relationships included within the model.

endpoint detection and response (EDR)–A cybersecurity technology that continuously monitors end-user devices to detect and respond to cyber threats.

end-to-end (E2E) visibility–The ability to see all stages of supply chain, from multiple tiers of suppliers to the manufacturer to final customers. E2E visibility provides the ability to monitor items as they move through the supply chain.

end-user computing (EUC)–Providing computers, applications, and other technology resources to a workforce in order to perform daily operations.

engineering change–A revision to a drawing or design released by engineering to modify or correct a part. The request for the change can be from a customer or from production, quality control, another department, or a supplier. Syns.: engineering change notice (ECN), engineering change order, engineering order.

engineering change notice (ECN)–Syn.: engineering change.

engineering change order–Syns.: engineering change, engineering order.

engineering characteristics–The technical features and attributes designed into a product that can be measured. Examples include weight, dimensions, and material composition.

engineering drawing–A visual representation of the dimensional characteristics of a part or assembly at some stage of manufacture.

engineering order–Syns.: engineering change, engineering change order.

engineering standard–Design or test guidelines intended to promote standardization of the design, production, and test of a part, component, or product. The objectives are ease of maintenance, consistency, adequacy of test procedures, versatility of design, ease of production and field service, and minimization of the number of different tools and special tools required.

engineer-to-order (ETO)–Products whose customer specifications require unique engineering design, significant customization, or new purchased materials. Each customer order results in a unique set of part numbers, bills of material, and routings. Syn.: design-to-order (DTO).

enterprise–Any undertaking, venture, initiative, or business organization with a defined mission.

enterprise business plan reconciliation–The capability to seamlessly integrate strategic goals, financial objectives, and tactical operational plans into everyday business decision-making through access to cross-functional data and deliberate alignment.

enterprise performance management (EPM)–The process of monitoring performance across the enterprise with the goal of improving business performance. An EPM system integrates and analyzes data from many sources, including e-commerce systems, front- and back-office applications, data warehouses, and external data sources. Advanced EPM systems can support many performance methodologies, such as the balanced scorecard.

enterprise resource management (ERM)–The planning, execution, and control of assets used to run an organization, such as materials, personnel, and technology.

enterprise resource planning (ERP)–Integrated business software that manages all areas of a business, including manufacturing, accounting, distribution, etc. An ERP system provides a framework for standardizing processes and common extensive databanks of information, including master files, financial details, analyses of product and customer hierarchies, and historic and current transactional data.

entitlement–To be owed something under the law. A contract, service agreement, or warranty provides entitlement to the entity or person an item was sold to. Entitlement is often used in returns to assure the item is entitled to be returned, reimbursed, or replaced within a certain timing of receipt or to guarantee additional services such as installation.

entrepreneur–One who operates a business and bears the financial risk of the venture.

environmental management system (EMS)–A system that enables an organization to identify, measure, control, and manage the impact its activities, products, and services have on the environment. These systems also enable organizations to manage their contributions to sustainability, environmental obligations, and risks.

Environmental Protection Agency (EPA)–A U.S. agency with regulatory authority over matters affecting the environment, including waste generation and habitat destruction.

environmental scanning–A process used to determine an organization's potential strengths, weaknesses, opportunities, and threats. Many experts emphasize opportunities and threats because the tool is primarily external. See: PESTLE analysis, SWOT analysis.

environmental sustainability–The practice of minimizing the impact of processes and activities on the environment by responsibly managing the use of natural resources.

environmental, social, and governance (ESG) framework–A set of standards for assessing an organization's economic, environmental, and social impacts on the environment and society. ESG principles can be used to identify opportunities for improvement.

environmentally responsible business–A firm that operates in such a way as to minimize detrimental impacts on society. See: green manufacturing, green supply chain.

environmentally responsible manufacturing–A collection of manufacturing activities that includes design of the product, facility, manufacturing processes, logistics, and supplier relationships that reduce or eliminate environmental waste through innovation and improvements.

environmentally responsible purchasing–Syn.: responsible procurement.

environmentally sensitive engineering–Designing with consideration of how a product or its packaging will ultimately be disposed.

EOQ–Acronym for economic order quantity.

EPA–Acronym for Environmental Protection Agency.

EPC–Acronym for electronic product code.

ePI–Acronym for electronic product information.

EPM–Acronym for enterprise performance management.

EPR–Acronym extended producer responsibility.

e-procurement–E-commerce tools and applications that automate the activities associated with purchase order generation, order management, communication, document transfer, procurement status, and logistics. See: e-catalog, paperless purchasing.

equal employment opportunity (EEO)–In the United States, the laws prohibiting discrimination in employment because of race or color, gender, age, handicap status, religion, and national origin.

Equal Employment Opportunity Commission (EEOC)–An administrative agency in the United States that oversees Title VII of the Civil Rights Act, which prohibits employment discrimination based on race, color, religion, gender, or national origin.

equipment class–A means to describe a group of equipment with similar characteristics for purposes of planning and scheduling.

equipped boxcar–A specially modified boxcar used for specific merchandise, such as automobile parts or different types of commodities.

equity–The value of ownership's interest in a company.

equivalent days–The standard hour requirements of a job converted to days for scheduling purposes.

equivalent unit cost–A method of costing that uses the total cost incurred for all like units for a period of time divided by the equivalent units completed during the same time period.

equivalent units–Units of work or inventory translated into a standard of fully completed units for valuation purposes. An equivalent unit can be the sum of several partially completed units. For example, two units that are 50 percent completed are considered as one fully completed unit.

ergonomics–Approach to job design that focuses on the interactions between the human operator and environmental elements, such as atmospheric contaminants, heat, light, sound, and all tools and equipment.

ERM–Acronym for enterprise resource management.

ERP–Acronym for enterprise resource planning.

ES–Acronym for early start date.

escalation–1) An increase in the prioritization or seriousness of a situation. For example, escalating a business issue to top management. 2) An amount or percentage by which a price may be adjusted if specified contingencies occur, such as changes in the supplier's raw material or labor costs.

ESG–Acronym for environmental, social, and governance.

ESI–Acronym for early supplier involvement.

e-sourcing–E-commerce that enables purchasers to identify sources of supply through supplier search, product search, and prepurchasing services. See: electronic commerce (e-commerce).

estimate at completion (EAC)–Estimated cost of an activity or project when the defined scope of work will be finished. It is the actual cost to date plus the estimated cost to complete for uncompleted activities.

estimate of error–In statistics, a measure of dispersion. See: standard deviation, standard error, variance.

estimate to complete (ETC)–Expected cost to complete all remaining work for an activity or project.

ETC–1) Acronym for export trading company. 2) Acronym for estimate to complete.

ethical procurement–The practice of incorporating ethical standards into the procurement process, such as in reviewing supplier business procedures and practices, as well as monitoring for corruption. The common areas relate to ethics and ethical behavior in companies, including fair trade, ethical trading, ethical sourcing, social accountability, social auditing, corporate social responsibility (CSR), corporate citizenship, codes of conduct, and reputation assurance. See: UN Global Compact Management Model.

ethical sourcing–The process of ensuring that the products made are obtained through responsible and sustainable methods and suppliers. See: sustainability.

ethical standards–A set of guidelines for proper conduct by business professionals and organizations.

ETL–Acronym for extract, transform, load.

EUC–Acronym for end-user computing.

euro–Official currency of the Eurozone, which forms a large part of the European Union.

eurobond–An internationally marketed bond, issued in a foreign currency and country.

eurocurrency–Money that is deposited in banks outside the country that issued it.

eurodollar–A U.S. dollar held in a foreign bank, not regulated by the U.S. Federal Reserve.

European Union (EU)–An economic and political union of European countries created to strengthen economies and lower trade barriers.

EV–Acronym for earned value.

evaporating cloud–In theory of constraints, a logic-based tool for surfacing assumptions related to a conflict or problem. Once the assumptions are established, actions to break an assumption and hence solve (evaporate) the problem can be determined. It is sometimes referred to as a conflict resolution diagram.

event–An identifiable point in time among a set of related activities. Graphically, an event can be represented by two approaches: (1) In activity-on-node networks (AONS), it is represented by a node. (2) In activity-on-arrow networks (AOAs), the event is represented by the arrow.

event management system (EMS)–Technology that monitors and manages critical activities in a supply chain and provides alerts when a transaction occurs that is outside predefined thresholds.

event-based marketing–A marketing strategy that promotes products or services through specific events, such as trade shows or seasonal promotions.

everyday low pricing (EDLP)–A retail strategy of keeping prices low across all products or services as opposed to having sales at certain times.

EVM–Acronym for earned value management.

exception management–The practice of responding only to issues or events that fall outside a predetermined threshold. Managers are prompted to respond to these critical matters first. This practice is often applied to management of budgets, projects, and risks. It is sometimes referred to as management by exception.

exception message–A message generated by material requirements planning (MRP) denoting a change to the balance of supply and demand that will require action. See: action message.

exception report–A report that lists or flags only those items that deviate from planned thresholds.

excess capacity–Capacity that is not scheduled to be consumed by production or that is in place to protect the creation of throughput. See: idle capacity.

excess inventory–Any inventory that exceeds the minimum amount necessary to achieve the desired throughput rate at the constraint or that exceeds the minimum amount necessary to achieve the desired due date performance. Total inventory = productive inventory + protective inventory + excess inventory.

excess issue–The removal from stock and assignment to a schedule of a quantity larger than the schedule quantity. Syn.: overissue.

exchange rate–The rate at which one currency converts to another.

executive dashboard–A set of cross-functional metrics for measuring company performance that indicates the health of the company. It usually includes the company's key performance indicators. See: dashboard.

executive information system (EIS)–Decision-support software used by senior management to review and analyze key data for strategic management decisions.

executive sales and operations planning (executive S&OP)–The portion of sales and operations planning (S&OP) that defines executive decision-making processes to balance supply and demand at the volume level in families, fully integrates financial planning and operational planning, and provides a forum for establishing and linking high-level strategic plans with day-to-day operations. See: sales and operations planning (S&OP).

executive sponsor–In Supply Chain Operations Reference (SCOR) implementation, the person chosen to spearhead the change process who is responsible for approving the change steps of the plan and selling the plan to the chief executives and lower-level managers of the organization.

exempt carrier–A for-hire carrier that is free from economic regulation.

exempt employee–A classification of employees or jobs for which compensation is not by an hourly rate. Exempt employees include most professionals, administrative and management personnel, and sales representatives. Specifically, the term refers to and is fully defined by the U.S. Department of Labor Fair Labor Standards Act, which regulates minimum wages and overtime for nonexempt employees. See: exempt position.

exempt position–A position that does not require the payment of overtime because it meets the test of executive, supervisory, or administrative activity, as defined under the U.S. Fair Labor Standards Act. See: exempt employee, nonexempt employee.

exit interview–An interview given to an employee who is leaving the company. The purpose is to find out why a person is leaving, what was liked and disliked about the job and the company, and what changes would make the department and the company a better place to work.

exogenous variable–A variable whose values are determined by considerations outside the model in question.

expected completion quantity–The planned quantity of a manufacturing order after expected scrap.

expected demand–The quantity expected to be consumed during a given time period when usage is at the forecast rate. See: demand during lead time.

expected demand during lead time–Syn.: demand during lead time.

expected life–The average length of time a product remains in service or in a serviceable condition.

expected receipt date–The date material or services are expected to be received on a purchase order or production order. The date can be based on the due date or a revised date based on the supplier's confirmation.

expected value–The average value that would be observed in taking an action an infinite number of times. The expected value of an action is calculated by multiplying the outcome of the action by the probability of achieving the outcome.

expedite–1) To rush or chase production or purchase orders that are needed in less than the normal lead time in order to move in the delivery date. 2) To take extraordinary action because of an increase in relative priority. Syn.: stockchase.

expedited logistics–The time-sensitive movement of freight that prioritizes speed to deliver goods on time and faster than standard shipping services. Expedited shipments often necessitate direct routes with little or no intermittent handling or consolidation and may incur higher costs. See: expediting.

expediting–The process of accelerating production lots, transportation shipments, or purchase orders that are required in less than the normal lead time. Expediting represents an extraordinary action that is necessary because of an increase in relative priority, previous supply delays, or a change in existing plans. See: expedited logistics.

expeditor–A purchasing, transportation, or production control person whose primary duty is expediting.

expendables–Syn.: consumable.

expense–Expenditures of short-term value, as opposed to land and other fixed capital. See: overhead.

expensed stock–Syn.: floor stock.

experience curve–Syn.: learning curve.

experience curve pricing–An average cost pricing method that uses an estimate of future average costs based on an experience (learning) curve.

experimental design–A formal plan that details the specifics for conducting an experiment, such as which statistical techniques and responses, factors, levels, blocks, and treatments are to be used.

experimental order–An order generated by the laboratory, research and development, or engineering group that must be run through regular production facilities with potential future product or market development as a project or team goal. Syns.: laboratory order, pilot order, R&D order.

experimental research–A form of research (sometimes used in marketing research) where matched sets of people are controlled for certain variables (such as income, age, and so on) while other variables (such as products offered) are varied to test research questions. See: marketing research.

expert system–A type of artificial intelligence (AI) that mimics human experts by using rules and heuristics rather than deterministic algorithms. See: artificial intelligence (AI).

explode–To perform a bill-of-material explosion.

explode-to-deduct–Syn.: backflush.

explosion–Syn.: requirements explosion. Ant.: implosion.

explosion level–Syn.: low-level code.

exponential distribution–A continuous probability distribution in which the probability of occurrence either steadily increases or decreases. The steady increase case (positive exponential distribution) is used to model phenomena such as customer service level versus cost. The steady decrease case (negative exponential distribution) is used to model phenomena such as the weight given to any one time period of demand in exponential smoothing.

exponential smoothing forecast–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.

export–A product produced in one country and used in another.

export broker–A party that introduces the buyer to the seller, earning a fee for services rendered.

export compliance–Cooperating with export rules regarding packaging and documentation.

export license–A document received from a governmental agency that authorizes the export of goods in specific quantities to a particular destination for a particular end use.

export management company (EMC)–An organization that serves as a sales department for a domestic organization's international markets, earning commissions on completed sales. EMCs select distribution channels and markets, arrange promotional campaigns, analyze customer credit information, advise on payment terms, administer documentation, and collect international debts. They may also arrange transportation, provide warehouse space, manage export inventory, and provide break-bulk services.

export packing list–A list that outlines the items included in a shipment that can be matched against the pro forma invoice by any concerned party involved in the transaction.

export trading company (ETC)–An organization that typically purchases goods outright in one country for resale in a different country at a profit. The organization locates buyers and handles all inland and overseas transportation, documentation, and foreign government requirements. Some may perform these services without formally taking title to the goods. See: import merchant.

exposure–The risk of a stockout occurring during an inventory cycle. The number of exposures per year is calculated by dividing the annual usage by the lot size.

express–1) A carrier's payment to its customers when ships, railcars, or trailers are unloaded or loaded in less than the time allowed by contract and returned to the carrier for use. See: demurrage, detention. 2) The use of priority package delivery to achieve overnight or second-day delivery.

express warranty–A positive representation made by a seller concerning the nature, character, use, and purpose of goods that induces the buyer to buy.

extendable trailer–Trailers that can be either extended or shortened to accommodate loads of different sizes.

extended enterprise–The concept of supply chain partners forming a larger entity or network. See: supply chain community.

extended producer responsibility (EPR)–The requirement that the original producer of an item is responsible for the environmental impact of their product throughout its life cycle.

extensible markup language (XML)–A language and file format that facilitates direct communication and sharing of data between computers on the internet. Unlike the older hypertext markup language (HTML), which provides HTML tags giving instructions to a web browser about how to display information, XML tags give instructions to a web browser about the category of information.

external analysis–Evaluating external factors, such as competition and industry environment, to enable an organization to determine changes needed to stay successful. See: SWOT analysis.

external customer–A person or organization that receives a good, a service, or information but is not part of the organization supplying it. See: customer, internal customer.

external environment–All the factors that exist outside the boundary of the organization that have the possibility of affecting any part of the organization. See: internal environment, organizational environment.

external factory–A situation in which suppliers are viewed as an extension of the firm's manufacturing capabilities and capacities. The same practices and concerns that are commonly applied to the management of the firm's manufacturing system should also be applied to the management of the external factory.

external failure cost–A cost related to problems found after the product reaches the customer. This usually includes such costs as warranty and returns. See: failure cost, quality costs.

external risk–A risk driven by events outside the organization, such as those that occur upstream or downstream in the supply chain, e.g., competitive or industry risks. See: SWOT analysis.

external setup time–The time associated with elements of a setup procedure performed while the process or machine is running. Ant.: internal setup time.

externality–The costs or benefits of a firm's activities borne or received by others.

extract, transform, load (ETL)–A tool that uses business rules to clean, organize, and integrate data from multiple sources into a repository. See: data lake, data lakehouse, data warehouse.

extranet–A network connection to a partner's network using secure information processing and internet protocols to do business.

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

extrinsic forecasting method–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.

extrinsic motivation–Motivation driven by external factors. These may be tangible, such as money, or intangible, such as recognition. The motivation is a result of an outcome outside the individual, as opposed to intrinsic motivation, which involves doing something for self-satisfaction. See: intrinsic motivation.

F

fabrication–Manufacturing operations for making components (as opposed to assembly operations).

fabrication order–A manufacturing order authorizing the production of component parts. See: batch card, manufacturing order.

fabricator–A manufacturer that transforms material into a larger variety of products. For example, a fabricator may turn steel rods into nuts, bolts, and twist drills or may turn paper into bags and boxes.

facilitating product–A product that supports the operations of a firm but is not sold externally, such as furniture and computers. See: indirect materials.

facility–A physical plant, distribution center (DC), service center, office, or laboratory and the related equipment of an organization.

facility layout–A description of where machines and utilities will be located in a facility, as well as the arrangement of processes.

facility master planning–The process of developing a document that describes the facilities an organization requires to fulfill its mission. It is commonly guided by a vision statement and supporting goals and takes into account regulations, security, phasing plans, cost projections, and environmental design.

facility planning–Long-range plan of what capacity is needed, when it will be needed, and what facilities will meet these requirements. This also includes a plan for the layout of these facilities.

factory within a factory–A technique to improve management focus and overall productivity by creating autonomous business units within a larger physical plant. Syn.: plant within a plant.

failsafe technique–Syns.: failsafe work method, mistake-proofing, poka-yoke.

failsafe work method–A method of performing operations so that erroneous or faulty actions cannot be completed. For example, a part without holes in the proper place cannot be removed from a jig, or a computer system rejects invalid numbers. Syns.: failsafe technique, mistake-proofing, poka-yoke.

failure analysis–The collection, examination, review, and classification of failures to determine trends and to identify poorly performing parts or components.

failure cost–An element of the cost of poor quality model to include both internal and external failure costs. See: cost of poor quality, external failure cost, internal failure cost.

failure mode analysis (FMA)–A procedure to determine which malfunction symptoms appear immediately before or after the failure of a critical parameter in a system. After all the possible causes are listed for each symptom, the product is designed to eliminate the problems.

failure mode and effects analysis (FMEA)–A procedure in which each potential failure mode in every component of an item is analyzed to determine its effect on other components and on the required function of the item.

failure mode effects and criticality analysis (FMECA)–A procedure that is performed after a failure mode and effects analysis to classify each potential failure effect according to its severity and probability of occurrence.

Fair Labor Standards Act (FLSA)–U.S. federal law that governs the definitions of management and labor and establishes wage payment, hours worked, and other employment practices.

fair return–A reasonable profit level or rate of return on an investment that regulatory agencies deem acceptable given the level of risk.

fair trade certification–A globally-recognized certification recognizing organizations that utilize economic, social, and environmental standards to produce products.

fair-share quantity logic–The process of equitably allocating available stock among field distribution centers (DCs) or customers. Fair-share quantity logic is normally used when total stock available is less than the cumulative requirements of orders or stocking locations. The objective is to maximize customer service from the limited available inventory.

FAK–Acronym for freight all kinds.

FAS–1) Acronym for final assembly schedule. 2) Acronym for free alongside ship.

fast-tracking–A project schedule compression technique that overlaps or performs in parallel activities that would ordinarily be performed sequentially.

fault isolation–A technique used to identify the cause of a defect in a product or system.

fault tolerance–The ability of a system to avoid or minimize the disruptive effects of defects by using some form of redundancy or extra design margins.

fault tree analysis–A logical approach to identify the probabilities and frequencies of events in a system that are most critical to uninterrupted and safe operation. This analysis may include failure mode and effects analysis (FMEA) and techniques for human error prediction.

FCFS–Acronym for first-come-first-served.

FCL–Acronym for full container load.

feasibility study–An analysis designed to establish the practicality and cost justification of a given project and, if it appears to be advisable to do so, to determine the direction of subsequent project efforts.

feature–A distinctive characteristic of a good or service that may be part of the standard product or an additional attribute that can be included as an upgrade. For example, in ordering a new car, the customer must specify an engine type and size (option) but need not necessarily select an air conditioner (feature). See: accessory, option.

Federal Aviation Administration (FAA)–The agency of the United States Department of Transportation responsible for the regulation and oversight of civil aviation within the U.S., as well as operation and development of the National Airspace System.

Federal Energy Regulatory Commission (FERC)–An independent agency that regulates the interstate transmission of electricity, natural gas, and oil and reviews proposals to build liquified natural gas pipelines and terminals and hydropower projects.

Federal Maritime Commission (FMC)–A U.S. agency responsible for regulating the international ocean transportation system. This includes oversight of agreements and contracts of ocean common carriers and marine terminal operators in order to protect exporters, importers, and consumers against unfair and deceptive practices.

Federal Motor Carrier Safety Administration (FMCSA)–The Federal Motor Carrier Safety Administration, or FMCSA, is an agency of the U.S. Department of Transportation, or DOT. FMCSA regulates the motor carrier industry. Motor carriers must register with the FMCSA and also provide Proof of Insurance.

Federal Trade Commission (FTC)–The U.S. governmental agency charged with protecting businesses and consumers from unfair business practices. It also regulates advertising and promotion at the national level.

feedback–The flow of information back to a system so that actual performance can be compared with planned performance.

feedback loop–The part of a closed-loop feedback system where information flows back to provide a continuous cycle.

feeder workstation–An area of manufacturing that feeds a subsequent work area.

feedstock–Raw material that supplies an industrial process, such as in the chemical or pipeline industries. Feedstock availability is frequently the controlling factor in setting the production schedule and rate for a process.

FEFO–Acronym for first expiry first out.

FEU–Acronym for forty-foot equivalent unit.

fiduciary–One having the duty to act on another's behalf in a trustworthy and confidential fashion.

field–A specified area of a data record used for a particular category of information.

field service–The functions of installing and maintaining a product for a customer after the sale or during the lease. Field service may also include training and implementation assistance. Syn.: after-sales service. See: connected field service.

field service part–A part inventoried in distribution centers (DCs) or warehouses for the purpose of field service.

field warehouse–A public warehouse in which an external manager takes custody of goods that are stored on the property of their owner, who uses the inventory as loan collateral.

FIFO–Acronym for first in, first out.

file–Specific data records collected and kept in a single location.

file structure–The manner in which records are stored within a file (e.g., sequential, random, index-sequential).

file transfer protocol (FTP)–A protocol used to transfer files over the internet.

fill rate–The percentage of units ordered that can be fulfilled from available inventory. Syns.: customer service level, customer service ratio. See: line fill rate, order fill rate, percent of fill.

final assembly–The last level of assembled product, just prior to shipping to a customer.

final assembly department–The manufacturing department in which the final product is assembled. See: blending department, pack-out department.

final assembly schedule (FAS)–A schedule of end-items to finish the product for specific customers' orders in a make-to-order (MTO) or assemble-to-order (ATO) environment. It is also referred to as the finishing schedule because it may involve operations other than the final assembly, such as final mixing, cutting, or packaging. The FAS is prepared after receipt of a customer order and is constrained by the availability of material and capacity. It schedules the operations required to complete the product from the level where it is stocked (or master scheduled) to the end-item level.

financial accounting–The use of generally accepted accounting principles to prepare reports to external agencies such as investors and governmental agencies.

financial benchmarking–Comparing one company's financial results to those of another company. This type of benchmarking need not involve direct contact between the initiator company and the target company, as many financial records are publicly available. See: benchmarking.

financial forecasting–Estimating a firm's future financial statements.

financial leverage management ratio–A measurement that reflects the degree to which a firm is financing its assets with debt.

finish date–The time of completion of a project or activity. It may be planned, actual, early, late, baseline, or target.

finished good–An item on which all manufacturing operations, including final testing, have been completed. The product is available for shipment to the customer as either an end-item or repair part. See: finished goods inventory. Syn.: end-item.

finished goods inventory–The on-hand stock of items on which all manufacturing operations, including final testing, have been completed.

finished product–Syn.: end-item.

finishing lead time–1) The time that is necessary to finish manufacturing a good after receipt of a customer order. 2) The time allowed for completing the good based on the final assembly schedule.

finish-to-finish–In project management, a network requirement that activity A must be finished before subsequent activity B can finish. See: logical relationship.

finish-to-order (FTO)–Syn.: assemble-to-order (ATO).

finish-to-start–In project management, a network requirement that activity A must be finished before activity B can start. See: logical relationship.

finite forward scheduling–A scheduling technique that builds a schedule by proceeding sequentially from the initial period to the final period while observing capacity limits. A Gantt chart may be used with this technique. See: finite loading.

finite loading–Assigning no more work to a work center than the work center can be expected to execute in a given time period. The term usually refers to a technique that involves calculating shop priority revisions in order to level load operation by operation. Syn.: finite scheduling. See: drum-buffer-rope (DBR).

finite scheduling–Syn.: finite loading.

firewall–A device used to control access to a company's data from the internet or other outside sources.

firm master production schedule–A part of the master production schedule (MPS) in which changes can occur only with management approval.

firm offer–A written offer to buy or sell goods that will be held open for a stipulated period.

firm planned order (FPO)–A planned order that can be frozen in quantity and time. The order is not changed automatically to balance supply and demand, but it can be overridden by the planner. This technique can aid planners working with material requirements planning (MRP) to respond to material and capacity problems by firming up selected planned orders. See: nervousness, planning time fence.

first expiry first out (FEFO)–A picking methodology assuring that the usage shelf life of items is optimized. This technique is used for those goods that have expiration or shelf-life dates.

first in, first out (FIFO)–1) A method of inventory valuation for accounting purposes. The assumption is that the oldest inventory (first in) is the first to be used (first out). This may or may not be related to the actual physical movement of specific items. See: average cost system; first-come-first-served (FCFS) rule; last in, first out (LIFO). 2) An inventory management method in a warehouse or distribution center (DC) in which the oldest units remaining in inventory for a given part or product are the first items picked. This method is especially useful in managing the inventory of perishable products to limit product expiration.

first pass yield–The ratio of products that conform to specifications without rework or modification to total input.

first-article inspection–A quality check on the first component run after a new setup has been completed. Syn.: first-piece inspection.

first-come-first-served (FCFS) rule–A dispatching rule under which the jobs are sequenced by their arrival times. See: earliest due date (EDD); earliest operation due date (ODD); first in, first out (FIFO).

first-mover advantage–The phenomenon of market leadership being gained through market innovation.

first-order smoothing–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.

first-piece inspection–Syn.: first-article inspection.

first-tier customer–The immediate buyer of goods or services from a business, without intermediaries. See: tier one.

first-tier supplier–The immediate supplier of goods or services to a business, without intermediaries. See: tier one.

fishbone analysis–A technique to organize the elements of a problem or situation to aid in the determination of the causes of the problem or situation. See: cause-and-effect diagram, fishbone diagram, five M's.

fishbone chart–Syn.: cause-and-effect diagram.

fishbone diagram–Syn.: cause-and-effect diagram. See: fishbone analysis.

fishyback–An intermodal form of cargo transport in which truck trailers are transported as containers on a barge or ship.

fitness for use–A term used to indicate that a good or service fits the customer's defined purpose for that good or service.

five focusing steps–In theory of constraints, a process to continuously improve organizational profit by evaluating the production system and market mix to determine how to make the most profit using the system constraint. The steps consist of (1) identifying the constraint to the system; (2) deciding how to exploit the constraint to the system; (3) subordinating all non-constraints to the constraint; (4) elevating the constraint to the system; and (5) returning to step 1 if the constraint is broken in any previous step, while not allowing inertia to set in.

five M's–The branches of a cause-and-effect (fishbone) diagram: manpower, methods, materials, machines, and measurements. See: fishbone analysis.

five W's–Syn.: five whys.

five whys–A process improvement technique that involves asking why five times when confronted with a problem. By the time the answer to the fifth why is found, the ultimate cause of the problem is identified. Syn.: five W's. See: root cause analysis.

five-forces model of competition–A methodology for analyzing competitive pressures in a market and assessing the strength and importance of each of those pressures.

fixed asset–An asset acquired for use within a company having an estimated useful life of one year or more.

fixed budget–A budget of expected costs based on a specific level of production or other activity.

fixed cost–An expenditure that does not vary with the production volume, such as rent, property tax, and salaries of certain personnel.

fixed order interval inventory model–An independent demand, periodic-review item management model in which an order is placed at fixed intervals (such as weekly, biweekly, or monthly). The order quantity is variable and replaces the items consumed during the current time period to return the inventory to the target inventory level. The target inventory level must be large enough to cover the maximum expected demand during the lead time plus the length of the review interval. Syns.: fixed-interval order system, periodic review system, time-based order system. See: fixed order quantity (FOQ) inventory model, hybrid inventory system, min-max system, optional replenishment model.

fixed order period system–A method of inventory planning that measures actual inventory levels at regular intervals of time. A check of inventory levels is performed and an order placed if needed. Often the quantity ordered varies from period to period as inventory is restored to a predetermined level. See: fixed order quantity (FOQ), min-max system, period order quantity (POQ).

fixed order quantity (FOQ)–A lot-sizing technique in material requirements planning (MRP) or inventory management that will always cause planned or actual orders to be generated for a predetermined fixed quantity, or multiples thereof, if net requirements for the period exceed the fixed order quantity (FOQ). See: fixed order period system, min-max system, period order quantity (POQ).

fixed order quantity (FOQ) inventory model–An independent demand, perpetual-review item management model in which a fixed quantity of units is ordered when the remaining inventory level drops to the reorder point (ROP). The fixed quantity is often equal to the economic order quantity (EOQ) or is determined by transportation lot sizes or quantity discount levels. Syns.: fixed order quantity (FOQ), order point/order quantity system, quantity-based order system. See: fixed order interval inventory model, hybrid inventory system, optional replenishment model, order point, order point system, statistical inventory control, time-phased order point (TPOP).

fixed overhead–All manufacturing costs, other than direct labor and direct materials, that exist even if products are not produced. Although fixed overhead is necessary to produce the product, it cannot be directly traced to the final product.

fixed property–Property attached to, and not easily removed from, the location.

fixed-asset turnover–A measurement of sales divided by net fixed assets. Fixed assets reflect asset acquisition price less depreciation.

fixed-cost contribution per unit–An allocation process in which the total fixed cost for a period is divided by the total units produced in that given time period.

fixed-interval order system–Syn.: fixed order interval inventory model.

fixed-location storage–A method of storage in which a relatively permanent location is assigned for the storage of each item in a storeroom or warehouse. More space may be needed to store parts than in a random-location storage system, but fixed locations become familiar to warehouse personnel. See: random-location storage.

fixed-period quantity–A material requirements planning (MRP) lot-sizing technique that sets the lot size equal to the net requirements for a given number of periods. See: period order quantity (POQ).

fixed-period requirements–A lot-sizing technique that sets the order quantity to the demand for a given number of periods. See: discrete order quantity.

fixed-position layout–A factory layout in which the product is in a specific location and people, machines, and tools move to and from the product.

fixed-position manufacturing–A type of manufacturing used mostly for large, complex projects in which the product remains in one location for its full assembly period or may move from location to location after considerable work and time are spent on it. Examples of fixed-position manufacturing include shipbuilding or aircraft assembly, for which the costs of frequent movement of the product are very high. See: project manufacturing.

fixed-price contract–A contract in which the seller is paid a set price without regard to costs.

fixed-price incentive fee contract–A contract in which the seller is paid a set price and can earn an additional profit if certain stipulations are met.

fixture–A device or piece of equipment that is fixed in place.

flag of convenience–A ship registered in a nation other than its home country to take advantage of lower taxes and labor costs and fewer safety regulations.

flat bill of material (BOM)–A list of the aggregate quantities of all the materials, parts, and components from all levels of the bill of material (BOM) that are used to produce a single unit of an item. See: single-level bill of material (BOM).

flatbed–A type of truck trailer that has a floor but no enclosure. Sideboards or tie-downs are used to prevent cargo from falling off.

flatcar–A freight car with no top or sides used primarily for hauling machinery or building materials. The open design allows for the transport of large and oversized loads that won't be damaged by weather conditions.

flexibility–1) The ability of manufacturing to respond quickly, in terms of range and time, to external or internal changes. Six different categories of flexibility can be considered: mix flexibility, design changeover flexibility, modification flexibility, volume flexibility, rerouting flexibility, and material flexibility. 2) The ability of a supply chain to mitigate or neutralize the risks of demand forecast variability or supply uncertainty.

flexibility responsiveness–The ability of the firm and its management to change rapidly in response to changes taking place in the marketplace.

flexible automation–Automation that provides short setup times and the ability to switch quickly from one product to another.

flexible budget–A budget showing the costs and revenues expected to be incurred or realized over a period of time at different levels of activity, measured in terms of some activity base such as direct labor hours, direct labor costs, or machine hours. A flexible manufacturing overhead budget gives the product costs of various manufacturing overhead items at different levels of activity. See: step budget.

flexible capability–The ability to readily adapt machinery to process different components on an ongoing basis.

flexible capacity–The ability to operate manufacturing equipment at different production rates by varying staffing levels and operating hours with minimal effort.

flexible manufacturing system (FMS)–A group of numerically controlled machine tools that are centrally controlled. The various machining cells are interconnected via loading and unloading stations by an automated transport system. Operational flexibility is enhanced by the ability to execute all manufacturing tasks on numerous product designs in small quantities and with faster delivery.

flexible path equipment–Material handling equipment such as forklifts that are not required to follow fixed paths.

flexible specialization–A strategy based on multi-use equipment, skilled workers, and innovative senior managers to accommodate the continuous change that occurs in the marketplace.

flexible workforce–A workforce whose members are cross-trained and are permitted to be assigned to various tasks.

flextime–An arrangement in which employees are allowed to choose their own work hours as long as the standard number of work hours is worked.

float–1) The amount of work in process (WIP) inventory between two manufacturing operations, especially in repetitive manufacturing. 2) In supply chains, the time necessary for items such as documents and checks to travel from one supply chain partner to another. 3) In the critical path method of project management, the amount of time that an activity's early start or early finish time can be delayed without delaying the completion time of the entire project. There are three types: total float, free float, and independent float. Syns.: path float, slack.

floating inventory location system–Syn.: random-location storage.

floating order point–An order point that is responsive to changes in demand or to changes in lead time.

floating storage location–Syn.: random-location storage.

floor stock–An inventory of inexpensive production parts from which production workers can draw without requisitions. Syn.: bench stock, expensed stock.

floor-ready merchandise–Products shipped by a supplier having all needed tags, prices, security devices, etc., already in place for resale.

flow control–A specific production control system that is based primarily on setting production rates and feeding work into production to meet these planned rates and then monitoring and controlling production. See: shop floor control.

flow diagram–Syn.: flowchart.

flow line–Syn.: flow shop.

flow manufacturing–Syn.: flow shop.

flow order–A manufacturing order in a process environment that is filled by production over time rather than in discrete lots.

flow plant–Syn.: flow shop.

flow process chart–A graphic representation of the work performed, or to be performed, on a product as it passes through some or all of the stages of a process using symbols. Typically, the information included in the chart is quantity, distance moved, type of work done, work times, and equipment used. Syns.: process flowchart, process flow diagram. See: flowchart, process flow.

flow processing–In a process environment, the flow of work from one workstation to another at a nearly constant rate and with no delays. When producing discrete units, the process is called repetitive manufacturing; when producing non-discrete units over time, the process is called continuous manufacturing.

flow rack–A storage rack equipped with wheels or rollers, allowing product to flow from the back to the front of the rack to make the product more accessible for order picking.

flow rate–The running rate of work through the manufacturing process which is measured as the inverse of cycle time. For example, if the cycle time is two minutes per unit, the flow rate is 240 units per eight-hour shift.

flow shop–A form of manufacturing organization in which machines and operators handle a standard, usually uninterrupted, material flow. The operators generally perform the same operations for each production run. A flow shop is often referred to as a mass production shop. The plant layout is designed to facilitate a product flow, where each product, though variable in specifications, uses the same flow pattern. Production is set at a given rate, and the products are generally manufactured in bulk. Some process industries (chemicals, oil, paint, etc.) are examples of flow shops. Syns.: flow line, flow manufacturing, flow plant. See: continuous manufacturing, job shop.

flow time–The time between the release of a job to a work center or shop and when the job is finished.

flow time efficiency–The ratio of theoretical flow time to the actual flow time through a process.

flowchart–A chart that shows the operations, transportation, storage, delays, inspections, etc., related to a process. Flowcharts are used to better communicate a process and are an output of a flowcharting process. The flowchart is one of the seven tools of quality. Syn.: flow diagram. See: block diagram, flow process chart.

flowcharting–A systems analysis tool that graphically presents a procedure or process. Symbols are used to represent operations, transportations, inspections, storages, delays, and equipment.

FLSA–Acronym for Fair Labor Standards Act.

fluctuation inventory–Inventory that is carried as a cushion to protect against temporary variations in supply and demand. Syn.: fluctuation stock. See: inventory buffer.

fluctuation stock–Syn.: fluctuation inventory.

FMA–Acronym for failure mode analysis.

FMEA–Acronym for failure mode and effects analysis.

FMECA–Acronym for failure mode effects and criticality analysis.

FMS–Acronym for flexible manufacturing system.

FOB–Acronym for free on board.

FOB destination–A term of sale signifying that the supplier pays for transportation to the buyer's location, where the buyer takes possession of the goods.

FOB origination–A term of sale signifying that the buyer takes possession of the goods at the supplier's location, and the buyer must provide transportation.

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

focus group–A set of people who are interviewed together for the purpose of collecting marketing data.

focus strategy–Targeting a narrow market with specialized goods or services.

focused factory–A plant established to focus the entire manufacturing system on a limited, concise, manageable set of products, technologies, volumes, and markets precisely defined by the company's competitive strategy, technology, and economics. See: cellular manufacturing.

focused low-cost strategy–Targeting a market with a low-cost product line in order to lower the cost of sales and increase gross margin.

FOQ–Acronym for fixed order quantity.

force field analysis–A technique for analyzing the forces that will aid or hinder an organization in reaching an objective. An arrow pointing to an objective is drawn down the middle of a space. The factors that will aid the objective's achievement (called the driving forces) are listed on the left side of the arrow; the factors that will hinder its achievement (called the restraining forces) are listed on the right side of the arrow.

forecast–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.

forecast accuracy–A measurement of how correct a forecast is, often defined as 1- MAPE (mean absolute percentage error). See: forecast error.

forecast bias–The tendency of a forecast to consistently be either higher or lower than the actual demand.

forecast consumption–Syn.: consuming the forecast.

forecast error–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).

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

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

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

forecast period–Syn.: forecast interval.

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

Foreign Corrupt Practices Act (FCPA)–A law that prohibits a U.S. person or company from providing or offering payments, such as bribes or anything of value, to foreign government officials to obtain an advantage or retain business. See: United Nations Global Compact.

foreign/free trade zone (FTZ)–Designated areas within a country that are considered to be outside the country from a customs perspective. Material in the zone is not subject to duties and taxes until the material is moved outside the zone for consumption. There is no limit on the time material may remain in the zone. Commonly referred to as free trade zone internationally and foreign trade zone in the United States. See: duty-free zone.

for-hire carrier–A carrier that provides transportation services to the public for a fee. See: common carrier, contract carrier. Ant.: private carrier.

form utility–The value created by changing a good's form through a production process to meet customer needs. See: form-fit-function.

formal culture–The visible segment of the organizational culture, such as policies and procedures, mission statement, and dress codes. See: informal culture.

format–The predetermined arrangement of the characters of data for computer input, storage, or output.

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

formula–A statement of ingredient requirements. A formula may also include processing instructions and ingredient sequencing directions. Syn.: formulation. See: bill of material (BOM).

formulation–Syn.: formula.

forty-foot equivalent unit (FEU)–A measure of container capacity that is equivalent to two 20-foot equivalency units; that is, a unit equivalent to 40 feet long, 8 feet wide, and approximately 8 feet high.

forward ADU–Average daily usage (ADU) calculated using a forecast.

forward buying–The practice of buying materials in a quantity exceeding current requirements but not beyond the point that the long-term need exists. See: demand shifting.

forward flow scheduling–A procedure for building process train schedules that starts with the first stage and proceeds sequentially through the process structure until the last stage is scheduled.

forward integration–The process of buying or owning elements of the production cycle and/or channel of distribution downstream toward consumers in the supply chain. See: backward integration, vertical integration.

forward pass–In the critical path method of project management, working from the first node to the last node calculating early start times and early finish times as well as the project's duration. See: forward scheduling, backward pass, critical path method (CPM).

forward scheduling–A scheduling technique in which the scheduler proceeds from a known start date and computes the completion date for an order, usually proceeding from the first operation to the last. Dates generated by this technique are generally the earliest start dates for operations. See: forward pass. Ant.: back scheduling.

forward supply chain–A type of supply chain whose primary components may include material suppliers, production facilities, distribution services, and customers that are linked together by the feed-forward flow of materials and feedback flow of information.

Four Es of Leadership (4 Es)–A leadership development model created by Jack Welch. The initial 4 Es were Energy, Energize, Edge, and Execute. The framework often has been expanded to include Envision, Enable, and Empower.

four Ps–A set of marketing tools to direct the business offering to the customer. The four Ps are product, price, place, and promotion.

Fourier series–A form of analysis useful for forecasting. The model is based on fitting sine waves with increasing frequencies and phase angles to a time series.

Fourth Industrial Revolution–See: Industry 4.0.

fourth-party logistics (4PL)–A provider of logistics services as a supply chain partner. Fourth-party logistics (4PL) differs from third-party logistics (3PL) by being an interface between the client and multiple logistics services providers. In addition, it typically manages all aspects of the client's supply chain via a long-term contract. See: distribution warehouse, lead logistics provider (LLP), third-party logistics (3PL).

four-wall inventory–Syn.: wall-to-wall inventory.

FPO–Acronym for firm planned order.

framework agreement–An agreement between two parties that acknowledges that the parties have not reached a final agreement on all issues but agree enough to pursue a relationship.

franchising–The allowance of a third-party business to use the brand name and business model of a parent company.

free alongside ship (FAS)–An agreement that the seller is responsible for the delivery of goods to a designated port close enough to an arranged shipping vessel to allow for the easy transfer of goods. The seller is liable for all charges and responsibilities until the goods sold are delivered to the dock that will be used by the vessel.

free float–In the critical path method of project management, the amount of time that a given activity can be delayed without delaying an immediately subsequent activity's early start time. See: float, free slack, independent float, slack time, total float.

free on board (FOB)–An Incoterm which indicates at what point respective obligations, costs, and risks involved in the delivery of goods shift from the seller to the buyer.

free slack–The amount of time by which the completion of an activity in a project network can increase without delaying the start of the next activity. See: free float, slack time.

freight–1) Goods that are transported from one place to another. 2) The transportation of goods.

freight all kinds (FAK)–A system to simplify logistics by consolidating different products to be transported or classes of shipments into one classification with one negotiated rate, regardless of individual product rates.

freight bill–A freight carrier's invoice for a shipment.

freight broker–An organization that helps match carriers to freight, adding value by helping the shipper obtain better rates and helping the carrier more fully utilize their capacity and equipment. Syn.: broker.

freight carrier–A company that moves cargo via truck, rail, air, pipeline, or water.

freight charge–The rate established for the transportation of freight.

freight claim–A formal legal claim filed to seek monetary compensation for damaged freight, delayed or incorrect deliveries, overcharges, or other service failures. The amount of damages can be up to the value of the goods had they been safely delivered on time.

freight class–A category used to group products with respect to characteristics that affect a carrier's ability to transport them: (1) density, (2) stowability, (3) handling, and (4) liability. Transportation rates are often assigned based on the product's freight class. See: classification.

freight collect–An agreement in which the freight and charges are paid by the receiver upon delivery.

freight consolidation–The grouping of shipments to obtain reduced costs or improved utilization of the transportation function. Consolidation can occur by grouping by market area, according to scheduled deliveries, or within third-party pooling services, such as public warehouses and freight forwarders. See: milk run.

freight density–A measure of the weight of an item divided by its volume. Freight density is a factor in determining transportation charges because it affects the number of units of a product that can be carried by a piece of transportation equipment.

freight equalization–The practice by more distant suppliers of absorbing the additional freight charges to match the freight charges of a supplier geographically closer to the customer. This helps eliminate the competitive advantage of lower freight charges that the nearest supplier has.

freight forwarder–A company that arranges for shipments between the shipper and the carrier. A freight forwarder often combines smaller shipments to take advantage of lower bulk costs.

freight imbalance–The mismatch in freight flows between geographic locations, which leads to transportation equipment being more heavily loaded during one leg of the trip than the other leg(s) and results in reduced transportation capacity utilization.

freight pay and audit–The process of examining carrier invoices to determine if the correct rate, discount, fuel surcharge, and accessorial charges have been applied to the shipment before paying the invoice. This audit is necessary due to the complexity of carrier rate structures and contracts between shippers and carriers. This process can be handled internally or can be outsourced to external freight payment companies or third-party logistics (3PL) providers.

freight prepaid–An agreement where the freight and charges are paid by the shipper.

freight rate–An established price for the transport of goods, based on any number of factors, e.g., distance, weight, measure, equipment type, package, or commodity.

freight settlement document–A document that compares the actual freight order invoice with the agreed-upon rate and authorizes payment if the amounts are correct.

frequency distribution–A table that indicates the frequency with which data falls into each of any number of subdivisions, or classes, of the variable.

frequency of repair–Syn.: repair factor.

frictionless ordering–The ability to tie products to the customer experience through the ethical collection of real-time product data. The objective is to drive customer success in the use of the product or service to improve customer satisfaction. This capability enables all processes associated with customers ordering products, from making suggestions to providing convenient shopping in an environment optimized for customer experience.

friendshoring–A supply management strategy that shifts production or sourcing activities to countries that are considered to be geopolitical allies instead of locating these activities to minimize costs or to realize another economic benefit.

fringe benefits–Employer-granted compensations that are not directly tied to salary.

front room–The place where the customer comes into contact with the service operation. Many service operations contain front-room and back-room operations. See: back room.

frontloading–The strategic buildup of inventory in advance of the time period it is needed to mitigate potential shipping delays, capacity constraints, or increases in logistics costs due to transportation congestion, labor strikes, or impending tariffs in the future.

frozen zone–The periods of a master production schedule (MPS) that should not be changed or can only be changed upon management approval on rare occasions. This provides stability to the MPS. See: demand time fence (DTF), liquid zone, slushy zone, time fence.

FRT–Acronym for future reality tree.

FTC–Acronym for Federal Trade Commission.

FTL–Acronym for full truckload.

FTP–Acronym for file transfer protocol.

FTZ–Acronym for foreign trade zone.

fulfill–In SCOR DS, the activities associated with executing and fulfilling customer orders for products or services, including scheduling order delivery, picking, packing, shipping, installing, assembling, commissioning, and invoicing.

full cost pricing–Establishing price at some markup over the full cost (absorption costing). Full costing includes direct manufacturing as well as applied overhead.

full pegging–The ability of material requirements planning (MRP) to trace requirements for a given component all the way up to its ultimate end-item, customer, or contract number.

full truckload (FTL)–An agreement to ship a minimum of an entire truckload or container load to a single customer. The cargo is typically homogenous and stays on the same vehicle from the origin to the destination.

full-container load (FCL)–A container that has been filled close to its volume or weight limit or that holds only one shipper's order and the shipper has requested it be the only order in the container. See: full truckload (FTL).

functional benchmarking–Benchmarking a single function within an organization rather than the entire organization. See: benchmarking.

functional design–The development and definition of the business functions to be accomplished by software or technical development. This statement, after approval, provides the basis for the technical design.

functional layout–1) A facility configuration in which operations of a similar nature or function are grouped together. 2) An organizational structure based on departmental specialty (e.g., saw, lathe, mill, heat treat, press). Syns.: job shop layout, process layout.

functional manager–A manager responsible for a specialized department, such as accounting or engineering.

functional organizational structure–An organizational structure based on functional specialization, such as sales, engineering, manufacturing, finance, and accounting.

functional product–Mature products that tend to have long product life cycles, low profit margins, and predictable demand. Ant.: innovative product.

functional requirement–An attribute of a product that must function properly to avoid the failure of the product. Syn.: critical characteristic.

functional silo–An organizational structure in which each department is operated independently of the others. Each group is referred to as a silo. See: silo effect.

functional silo syndrome–An organizational phenomenon in which different departments or functions prioritize their own goals over the broader organizational or supply chain goals, leading to inefficiencies.

functional strategy–A strategy that is built from the business strategy for various business functions, such as finance, marketing, and production. See: strategic planning.

functional test–A measure of a production component's ability to work as designed to meet a level of performance.

functionality–The degree to which a product achieves its designed purpose.

funds flow management–Syn.: cash flow management.

funds flow statement–Syns.: cash flow statement, statement of cash flows.

funnel experiment–An experiment that demonstrates the effects of tampering. In the experiment, marbles are dropped through a funnel in an attempt to hit a flat-surfaced target below. The experiment shows that adjusting a stable process to compensate for an undesirable result or an extraordinarily good result will produce output that is worse than if the process had been left alone. See: tampering.

future reality tree (FRT)–In theory of constraints, a logic-based tool for constructing and testing potential solutions before implementation. The objectives are to (1) develop, expand, and complete the solution and (2) identify and solve or prevent new problems created by implementing the solution.

future value–A present payment's value at some point in the future given an assumed interest rate.

future worth–1) The equivalent monetary value at a designated future date based on the time value of money. 2) The monetary sum, at a given future time, that is equivalent to one or more sums at given earlier times when interest is compounded at a given rate. See: time value of money.

futures–Contracts for the sale and delivery of commodities at a future time for a predetermined price.

fuzzy logic–A field of logic based on "fuzzy sets"— that is, sets in which membership is probabilistic rather than deterministic.

G

G&A expense–Abbreviation for general and administrative expense.

GAAP–Acronym for generally accepted accounting principles.

gain sharing–A method of incentive compensation in which employees or supply chain partners share collectively in savings from productivity or efficiency improvements.

GAMP–Acronym for good automated manufacturing practice.

Gantt chart–A common type of planning and control chart that is designed to depict graphically the relationship between planned performance and actual performance over time. The chart is mainly used for (1) machine loading, in which one horizontal line is used to represent capacity and another to represent load against that capacity, or (2) monitoring job progress, in which one horizontal line represents the production schedule and another parallel line represents the actual progress of the job against the schedule in time. Syns.: job progress chart, milestone chart.

gap analysis–The assessment of the differences between the actual performance of a product or service and customer expectations.

gap phasing–Syn.: gapped schedule.

gapped schedule–A schedule in which every piece in a lot is finished at one work center before any piece can be processed at the succeeding work center. The material moves in complete lots where the process batch and transfer batch sizes are equal, causing time gaps between the end of one operation and the beginning of the next. Syns.: gap phasing, straight-line schedule. Ant.: operation overlapping.

gate review–The formal review process occurring between the major phases of a new-product introduction effort. The determination to continue or to stop the project is formally made at each review point or gate.

gatekeeping–1) In group dynamics, a technique applied by a team leader to effectively manage a situation, discussion, or meeting. For example, in a situation when a dominant person of authority monopolizes a discussion, the gatekeeper will intervene by requesting additional group members' input. 2) In logistics, the vetting of return materials and issuing of return material authorizations (RMAs) in accordance with the organization's returns policy to minimize returns and return costs while managing customer satisfaction.

gateway–The connection that allows data and other information to flow between two networks.

gateway operation–Syn.: gateway work center.

gateway work center–A work center that performs the first operation of a particular routing sequence.

GATT–Acronym for General Agreement on Tariffs and Trade.

gauge–An instrument for measuring or testing.

GDP–Acronym for gross domestic product.

GDSS–Acronym for group decision support system.

gemba–The place where humans create value or the real workplace. Gemba also is a philosophy that states, "Go to the actual place; see the actual work."

gemba walk–A management practice in which managers physically observe the actual work being carried out in order to understand it better, coach employees, guide improvements, and follow up on corrective actions with the line manager. See: gemba.

genchi genbutsu–A Japanese phrase meaning to visit the shop floor to observe what is occurring to facilitate problem-solving and process improvement.

general and administrative (G&A) expense–The category of expenses on an income statement that includes the costs of general managers, computer systems, research and development, etc.

general cargo ship–A cargo ship that transports large quantities of freight according to a charter. The ship has large storage spaces and handling equipment to facilitate the loading and unloading of a wide variety of freight at smaller ports that do not have modern loading and handling equipment.

general merchandise warehouse–A warehouse for the storage of goods that require no special handling.

generally accepted accounting principles (GAAP)–Accounting practices that conform to conventions, rules, and procedures that are generally accepted by the accounting profession in the United States. See: International Financial Reporting Standards (IFRS).

general-purpose machinery–Manufacturing resources that can perform several kinds of operations.

generative AI–Computer algorithms and applications that are used to create new data, text, charts, images, or audio based on input data. This technology enables the management of more efficient, responsive, and resilient supply chains, leading to reduced costs, improved customer service, increased adaptability to market changes, and improved decision-making.

generic processing–A means of developing routings or processes for the manufacture of products through a family relationship, usually accomplished by means of tabular data to establish interrelationships. It is especially prevalent in the manufacture of raw materials such as steel, aluminum, or chemicals.

geographical information system (GIS)–Software that collects information from GPS satellites to analyze map and route characteristics. See: mapping software.

GERT–Acronym for graphical evaluation and review technique.

GHG–Acronym for greenhouse gas.

GHS–Acronym for Globally Harmonized System of Classification and Labelling of Chemicals.

global marketing–The use of one marketing strategy in all countries in which a company operates to sell a common product worldwide.

global measurements–A set of related measurements used across an entire organization, rather than a specific resource, operation, process, or item. See: local measurements.

global positioning system (GPS)–A system that uses satellites to locate an object's position.

Global Reporting Initiative (GRI)–A network-based organization that pioneered the world's most widely used sustainability reporting framework.

Global Reporting Initiative (GRI) Standards–The framework that sets out the principles and performance indicators organizations can use to measure and report their human rights, labor, environment, and anticorruption practices and outcomes.

global sourcing–The acquisition of materials, parts, and supplies from international suppliers.

global strategy–A strategy that focuses on improving worldwide performance through the sales and marketing of common goods and services with minimum product variation by country. The firm's competitive advantage grows through selecting the best locations for operations in other countries. See: multinational strategy.

global supply chain–A supply chain used by organizations to deliver products and services that includes international partners or markets.

global trade identification number (GTIN)–An identification number that uniquely identifies all products and services that are sold, delivered, and invoiced at any point in the supply chain. GTINs are typically found at points of sale and on consumer unit, inner pack, cases, and pallets of products in a distribution or warehouse environment.

global trade management–The management and optimization of shipments across international borders to improve operating efficiencies and cash flows. This includes ensuring compliance with all international regulations and documentation and streamlining and accelerating the movement of goods.

globalization–The interdependence of economies globally that results from the growing volume and variety of international transactions in goods, services, and capital and also from the spread of new technology.

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)–An international standard created by the United Nations Economic Commission for Europe (UNECE) for classifying chemicals according to their health, physical, and environmental hazards. The system defines and classifies the hazards of chemical products and communicates health and safety information on labels and material safety data sheets. See: Harmonized Tariff Schedule (HTS).

glocalization–A combination of "globalization" and "localization." In a supply chain context, glocalization is a form of postponement in which a product or service is developed for distribution globally but is modified to meet the needs of a local market. The modifications are made to conform with local laws, customs, cultures, and preferences.

go/no-go–The state of a unit, product, or project whereby it either conforms to specifications or requirements (i.e., go) or does not conform (i.e., no-go).

going concern value–The value of the firm as a whole, rather than the sum of the values of the separate parts.

gondola freight car–A freight car with no top; a flat bottom; and low, fixed sides used primarily for hauling bulk commodities. These cars are commonly loaded from above.

good–A tangible product, merchandise, or ware.

good automated manufacturing practice (GAMP)–A set of best practices designed to ensure the overall quality of automated systems in the pharmaceutical industry. GAMP helps manufacturers to comply with regulations on computer systems and to validate their compliance.

goodness of fit–The degree to which a model complies with observed data.

goods receipt note (GRN)–A document that is completed after items are received from a supplier and inspected to confirm that the shipment conforms to the quantity, type, and specifications in the purchase order. Any discrepancies between the purchase order and the GRN must be resolved with the supplier before payment of the purchase order is authorized.

goodwill–An intangible asset that is recorded on a company's books only as the result of a purchase. Generally, it is inseparable from the enterprise but makes the company more valuable, such as by improving its reputation.

government market–A market in which most or all buyers consist of agencies of federal, state, or local governments. See: consumer market, industrial market, institutional market.

GPS–Acronym for global positioning system.

grade–The sublabeling of items to identify their particular makeup and to separate one lot from other production lots of the same item.

graphical evaluation and review technique (GERT)–A network analysis technique that allows for probability distributions of activity durations and also conditions under which some activities may not be carried out. See: critical path method (CPM), network analysis, program evaluation and review technique (PERT).

graphical forecasting method–The use of data visualization to predict sales patterns. Trends and patterns of data are easier to identify on a graph or chart, and extrapolation of previous demand can be used to predict future demand values.

graphical user interface (GUI)–A connection between the computer and the user employing a mouse and icons so that the user makes selections by pointing at icons and clicking the mouse.

gravity model–An approach used for locating facilities at the "center of gravity." Gravity is determined by the product of the masses of two bodies divided by the square of the distance between them. In a gravity model, the population of each neighborhood in the region is used as the mass, and driving time is used as the distance.

gray market–Products sold through unauthorized dealers or channels that generally do not carry a factory warranty nor customer support. As a result, these products are typically less expensive to purchase.

green belt–An employee who has been trained in six sigma improvement methods and has demonstrated the ability to develop and lead a quality improvement project.

green field–The initiation of a new process where no similar initiatives have previously existed.

green logistics–A business practice focused on minimizing the environmental impact of logistics activities. This is sometimes referred to as sustainable logistics.

green manufacturing–A method of producing a good or service that minimizes external cost and pollution. It includes design for reuse, design for disassembly, and design for remanufacturing. See: environmentally responsible business.

green marketing–The promotion of products and services that are environmentally sustainable.

green procurement–Supplier selection criteria based on environmental standards or the practice of prequalifying suppliers based on specifications related to their environmental practices. Suppliers are subsequently audited based on these green practices.

green reverse logistics–A reverse logistics strategy that reduces the environmental impact of end-of-life returned items through the recovery and recycling of materials and packaging.

green SCOR–An extension of the Supply Chain Operations Reference (SCOR) model that addresses environmental sustainability considerations through the inclusion of best practices, metrics for measuring greening efforts, and processes to deal with waste management.

green supply chain–A supply chain strategy that takes action along the supply chain to reduce the environmental impact of its activities throughout the product life cycle. See: environmentally responsible business, sustainable supply chain management.

green zone–The highest-level buffer zone in drum-buffer-rope scheduling indicating that the inventory buffer is at or near its target level. If available stock is in this zone, no additional supply is created. See: buffer management.

greenhouse gas (GHG)–Gases such as carbon dioxide and methane that contribute to global warming and climate change. See: carbon emissions.

greenwashing–The practice of a company claiming itself to be sustainable or socially responsible while engaging in actions that nullify such claims or prove them to be greatly exaggerated. Greenwashing commonly occurs in an extended supply chain when companies proclaim themselves to be sustainable but actually utilize suppliers that pollute the environment or provide substandard working conditions for employees.

GRI–Acronym for Global Reporting Initiative.

grid technique–A heuristic method used for locating plants and warehouses by finding the least-cost point given the positions of raw materials and markets and the weight or volume of goods to be moved. See: center-of-gravity approach.

grievance–A complaint by an employee concerning alleged contract violations handled formally through contractually fixed procedures. If unsettled, a grievance may lead to arbitration.

grievance procedures–Methods identified in a collective bargaining agreement to resolve problems that develop or to determine if a contract has been violated.

GRN–Acronym for goods receipt note.

gross domestic product (GDP)–The market value of all goods and services produced in a nation in a given year.

gross inventory–The standard cost value of inventory before allowance for excess or obsolete items.

gross margin–The difference between total revenue and the cost of goods sold (COGS), divided by the total revenue. Gross margin is expressed as a percentage. Syn.: gross profit margin.

gross profit–Total revenue minus cost of goods sold (COGS).

gross profit margin–Syn.: gross margin.

gross requirement–The total of independent and dependent demand for a component before the netting of on-hand inventory and scheduled receipts.

gross sales–The total sales revenue over an accounting time period before deducting for discounts, returns, and allowances. See: net sales.

gross weight–Vehicle weight including freight or passengers.

group classification code–A part of a material classification technique that provides for designation of characteristics by successively lower-order groups of code. Classification may denote function, type of material, size, shape, and so forth.

group decision support system (GDSS)–A software application designed to support groups in conducting unstructured decision-making by supporting brainstorming, conflict resolution, voting, and other collaborative techniques.

group layout–A layout in which machine groups are arranged to process families of parts with similar characteristics.

group replacement–Replacing an entire set of components, whether failed or not, all at one time (e.g., replacing all the light bulbs in a ceiling fixture).

group technology (GT)–An engineering and manufacturing philosophy that identifies the physical similarity of parts (common routing) and establishes their effective production. It provides for rapid retrieval of existing designs and facilitates a cellular layout.

group technology (GT) work cell–A concentrated area for producing parts based on similar operations and/or characteristics to use equipment and labor more efficiently.

grouping–Matching similar operations and running them together sequentially, thereby taking advantage of a common setup. See: group technology (GT).

groupthink–A situation in which a team seizes on one solution to a problem and does not consider other viable solutions either because members are afraid of confrontation or because they convince themselves that other ideas are not worth discussing.

growth trajectory–Syn.: ramp rate.

growth-share matrix–In marketing, a division of products by relative market share and market growth rate. Products are divided as follows: (1) cash cows, which have high market share but a low growth rate; (2) stars, which have high market share and a high growth rate; (3) dogs, which have low market share and a low growth rate; and (4) question marks, which have low market share and a high growth rate. Sometimes this same set of terms is used to categorize products by market share and profitability. See: cash cow, dog, question mark, star.

GT–Acronym for group technology.

GTIN–Acronym for global trade identification number.

guarantee–A contractual obligation of one entity to another asserting that a fact regarding a product is true. See: warranty.

GUI–Acronym for graphical user interface.

H

handling cost–The cost associated with receiving, moving, and retrieving inventory within a facility. In some cases, the handling cost depends on the size of the inventory.

hansei–A lean concept referring to introspection or self-reflection whereby a worker consistently reflects on their past actions to examine their mistakes or shortcomings and to determine how they can prevent them from occurring in the future.

hard automation–The use of specialized machines to manufacture and assemble products, typically dedicated to one function, such as milling, making it less flexible and adaptable to product changes.

hardware–1) In manufacturing, relatively standard items such as nuts, bolts, washers, or clips. 2) In data processing, the computer and its peripherals.

harmonic smoothing–An approach to forecasting based on fitting a set of sine and cosine functions to the historical pattern of a time series. Syn.: seasonal harmonics.

harmonized system (HS) code–An internationally standardized description of goods maintained by the World Customs Organization that uses a system of numbers to provide increasingly detailed classification for the purpose of assessing duties and gathering import and export statistics.

Harmonized Tariff Schedule (HTS)–The U.S. International Trade Commission's mechanism by which international tariffs are standardized. Importers and exporters classify goods moved across international borders using the harmonized system of the country of import. Then, based on this classification, the amount of tariff they must pay is determined.

hash total–A data validation check that ensures that no data records have been lost or omitted from processing. Typically, data fields that are not usually used in calculations (such as account numbers) are summed initially and then summed after processing. A mismatch in the two sums signals an error or a data omission. See: check digit.

Hawthorne effect–A psychological phenomenon whereby workers tend to modify their behavior and increase their performance as a result of being monitored or observed by managers or researchers.

hazardous materials–Any material that a country's relevant government agency has classified as a risk to human, animal, or environmental health or to property—either on its own or due to interaction with other elements. A government's transportation authority may allow transportation only when proper permits and safety precautions are implemented. Similarly, a government may regulate or supervise hazardous material disposal. Categories include explosives, flammable or corrosive liquids or gases, biohazards, and radioactive materials. Syn.: hazmat.

hazardous waste–Waste, such as chemicals, nuclear materials, or toxic substances, that is hazardous to humans, animals, or the environment and requires special handling and disposal procedures.

hazmat–Syn.: hazardous materials.

health, safety, and environment (HSE)–A set of processes and procedures identifying potential hazards to a certain environment, developing best practices to reduce or remove those hazards, and then training employees for accident prevention and response.

hedge–1) An action taken in an attempt to shield the company from an uncertain event such as a strike, price increase, or currency reevaluation. 2) In master scheduling, a scheduled quantity to protect against uncertainty in demand or supply. The hedge is similar to safety stock, but a hedge has the dimension of timing as well as amount. A volume hedge or market hedge represents excess quantities planned at the master schedule or production plan level over and above the demand quantities in given periods beyond a time fence such that, if the hedge is not needed, the planned quantities can be rolled forward before major resources must be committed to produce the hedge. A product mix hedge is an approach in which several interrelated optional items are overplanned. See: option overplanning, planning bill of material (BOM), safety stock, time fence, two-level master schedule.

hedge inventory–A form of inventory buildup to buffer against some event that may not happen. Hedge inventory planning involves speculation related to potential labor strikes, price increases, unsettled governments, and events that could severely impair a company's strategic initiatives. Risk and consequences are unusually high, and top management approval is often required.

hedging–The practice of entering into contracts on a commodity exchange to protect against future fluctuations in the commodity. This practice allows a company to isolate profits to the value-added process rather than to uncontrolled pricing factors. See: speculative buying.

heijunka–In just-in-time (JIT) philosophy, an approach to level production throughout the supply chain to match the planned rate of end product sales. See: load leveling, mixed-model production, mixed-model scheduling.

helper application–Software that assists the browser when audio, video, or large images are requested.

heuristic–A form of problem-solving in which the results or rules have been determined by experience or intuition instead of by optimization. Heuristics can be used in such areas as forecasting; lot sizing; or determining production, staff, or inventory levels.

hierarchical database–A method of constructing a database that requires related record types to be linked in tree-like structures in which no child record can have more than one physical parent record.

high-level language (HLL)–A type of computer language that allows users to employ a notation with which they are already familiar; for example, COBOL (business), ALGOL (mathematical and scientific), FORTRAN, BASIC, Java, and Visual Basic.

Hi-Lo–A forklift truck with a standing operator.

histogram–A graph of contiguous vertical bars representing a frequency distribution in which the groups or classes of items are marked on the horizontal axis and the number of items in each class is indicated on the vertical axis. This visualization of the shape of a frequency distribution enables the identification of characteristics such as skewness or kurtosis. The histogram is one of the basic seven tools of quality (B7).

historical analogy–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.

historical labor standard–A value used to reflect the amount of time expected to complete a task, which is determined by studying actual past labor data for the operation of interest.

HLL–Acronym for high-level language.

HMI–Acronym for human-machine interface.

Hofstede's cultural dimensions theory–An internationally recognized standard for understanding cultural differences that was developed by psychologist Dr. Geert Hofstede. The standard is based on six dimensions, namely: power and distance index, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance index, long- versus short-term orientation, and indulgence versus restraint.

hoist–A machine consisting of ropes or chains and pulleys that works with a crane to lift heavy loads and move them to a different location within a warehouse or production facility.

hold order–A written order directing that certain operations or work be interrupted or terminated pending a change in design or other disposition of the material. Syn.: stop work order.

hold point–A critical step in a project or manufacturing process beyond which subsequent stages cannot commence until inspection has verified that the work completed to that point meets required specifications.

holding company–In financial management, a firm that controls the voting stock of other firms.

holding cost–Syn.: carrying cost.

holonic network–1) A network of autonomous, distributed human or computer systems that are capable of acting in an integrated manner. 2) A network of companies dynamically interacting to act as one system. Each company, or holon, has a different process and core competency. Virtual enterprises are created by organizing the holons to take advantage of core competencies.

homogeneous product–A product that is effectively identical from producer to producer.

honeycomb loss–The unused empty storage space in a stack or a lane resulting from the storage of a single stock keeping unit (SKU) (as opposed to multiple SKUs) in the storage location. Honeycomb loss is a hidden operational cost in a warehouse caused by the reduced utilization that is required to ensure the accessibility of the single SKU.

honeycombing–The practice of moving a pallet of merchandise to an area where the space is not exhausted, resulting in a vacant space not usable for the storage of other items. This is one of the hidden costs of warehousing.

hopper car–A railcar with a floor sloping toward one or more hinged doors on the sides or the underside of the car to enable the discharge of bulk commodities. See: covered hopper.

HOQ–Acronym for house of quality.

horizontal carousel storage system–A series of bins mounted on an oval track that brings the correct bin to the operator position for the part to be picked and confirmed.

horizontal collaboration–Unrelated or competitive organizations working together across supply chains, e.g., two companies sharing assets to provide goods or services to the same customer.

horizontal dependency–The relationship between the components at the same level in the bill of material (BOM) in which all must be available at the same time and in sufficient quantity to manufacture the parent assembly. See: vertical dependency.

horizontal marketplace–An online marketplace used by buyers and sellers from multiple industries. This marketplace lowers prices by lowering transaction costs.

horizontal merger–The business consolidation of two or more competing firms into one.

horizontally integrated firm–An organization that seeks to produce or sell a type of product in numerous markets. Horizontal integration exists when an organization produces or sells similar products in various geographical locations. Horizontal integration in marketing occurs more frequently than horizontal integration in production. See: vertically integrated firm.

HOS–Acronym for hours of service.

hoshin–A Japanese word meaning statement of objectives.

hoshin kanri–See: hoshin planning.

hoshin planning–A Japanese strategic planning process that aligns long-term strategic goals with daily operations, feedback mechanisms, and training activities that facilitate continuous improvement.

host computer–Any computer on a network that is a repository for services available to other computers on the network. It is common to have one host machine provide several services, such as access to the internet.

hours of service (HOS)–Restrictions on the maximum amount of time that drivers may be on duty to remain awake and alert before they have to go off-duty and rest. The U.S. regulations also specify requirements for breaks as well as on-duty limits over a consecutive period of seven or eight days. Other countries place similar restrictions on drivers.

house of quality (HOQ)–A structured process that relates customer-defined attributes to the product's technical features needed to support and generate these attributes. HOQ is a part of the quality function deployment (QFD) process and forces designers to consider customer needs and the degree to which the proposed designs satisfy these needs. See: customer-defined attributes, quality function deployment (QFD).

housekeeping–The manufacturing activity of identifying and maintaining an orderly environment for preventing errors and contamination in the manufacturing process.

HS–Acronym for harmonized system.

HTS–Acronym for Harmonized Tariff Schedule.

HTTPS–Acronym for hypertext transfer protocol secure.

hub–1) A large manufacturer or retailer doing business with many trading partners. 2) In transportation, a terminal that receives shipments from local terminals and consolidates them into larger shipments for more efficient transport. See: hub-and-spoke system.

hub-and-spoke system–1) In warehousing, a system that has a hub (or center point) where sorting or transfers occur. The spokes are outlets serving the destinations related to the hub. 2) In transportation, a network of terminals that consolidate freight from local areas (spokes) into larger shipments at terminals (hubs) for more efficient movement to the destination. See: hub.

human capital management (HCM)–A system that helps employers manage their people resource management through workforce acquisition, management, and optimization. HCM is especially important for companies with knowledgeable workers, where the business's most critical asset is its people.

human factors engineering–A merging of those branches of engineering and the behavioral sciences that concern themselves principally with the human component in the design and operation of human-machine systems. Human factors engineering is based on a fundamental knowledge and study of human physical and mental abilities and emotional characteristics.

human resource management (HRM) system–Enterprise software that enables a company to manage its labor-related data such as details of employees, work hours, production rates, performance, and compensation.

human resources–The portion or department of a company that sets and manages personnel policies and practices.

human rights due diligence–A risk management strategy in which a firm identifies and assesses the human rights impacts of its activities and those of its supply chain. The firm should continually work to reduce or prevent these outcomes from occurring in the future, recognizing that risks may change over time based on the evolution of the firm's business practices and supply chain.

human-machine interface (HMI)–The portion of a device or software application (such as a keyboard, touchscreen, or dashboard) that enables people to interact with a machine or system.

hundredweight (cwt)–A term in transportation that refers to the weight of a shipment as measured in one-hundred-pound increments. For example, a shipment actually weighing 850 pounds would constitute 8.5 cwt.

hurdle rate–The minimum acceptable rate of return on a project.

hybrid cloud–A computing infrastructure that combines both public and private cloud environments, allowing an organization to choose where data should be stored. See: cloud computing.

hybrid EDI–An infrastructure platform that combines aspects of different types of electronic data interchange (EDI) to facilitate the seamless inter-company information transmission between data sources, systems, or software applications regardless of whether the companies use cloud or on-premise hosting.

hybrid inventory system–An inventory system combining features of the fixed order quantity (FOQ) inventory model and the fixed order interval inventory model. For example, in the order point-periodic review hybrid system, an order is placed if the inventory level drops below a specified level before the review date; if not, the order quantity is determined at the next review date. See: fixed order interval inventory model, fixed order quantity (FOQ) inventory model, optional replenishment model, order point system.

hybrid layout–A facility layout that combines aspects of two or more layout types (e.g., fixed-position layout, functional layout, group layout, etc.).

hybrid manufacturing process–Syn.: hybrid production method.

hybrid organizational structure–An organizational structure that embodies multiple organizational forms (functional, product, or geographical) simultaneously. For example, some functions may be centralized (such as finance and accounting), whereas others may be duplicated geographically (such as sales).

hybrid production method–A production planning method that combines the aspects of both the chase and level production planning methods to minimize the total cost over the planning horizon. Syns.: hybrid manufacturing process, hybrid strategy. See: chase production method, level production method, production planning methods.

hybrid purchasing organization–A mix of the centralized and decentralized purchasing format—usually decentralized at the corporate level and centralized at the business unit level.

hybrid strategy–Syn.: hybrid production method.

hyperautomation–A disciplined strategy focused on rapidly identifying, evaluating, and automating as many business processes as possible through the use of a combination of technologies such as robotic process automation (RPA), artificial intelligence (AI), and machine learning (ML). The goal of hyperautomation is to optimize processes and improve organizational speed and agility.

hypermedia–An addition to hypertext to include sound, pictures, or music.

hypertext–A system of relating information without using menus or hierarchies.

hypertext links–Links contained within text connecting to other websites or other pages on the current site.

hypertext markup language (HTML)–A language used to create web pages that permits the user to create text, hypertext links, and multimedia elements within the page. HTML is not a programming language but rather a way to format text.

hypertext transfer protocol (HTTP)–A protocol that tells computers how to communicate with each other. Most internet addresses begin with http://.

hypertext transfer protocol secure (HTTPS)–A protocol that provides security for data transfer and communication between a website and a user's web browser. It is a security-enabled version of hypertext transfer protocol (HTTP).

hypothesis testing–The use of statistical analysis to test conjectures about population parameters based on sample data.

I

I/O–Acronym for input/output.

I2M–Acronym for integrated internet marketing.

IaaS–Acronym for Infrastructure as a Service.

IAM–Acronym for identity and access management.

IATA–Acronym for International Air Transport Association.

IBP–Acronym for integrated business planning.

ICC–Acronym for Interstate Commerce Commission.

ICV–Acronym for in-country value.

ideal quality–A term used by Genichi Taguchi to refer to the target value of a particular measure. Loss to society increases with the square of the deviation of an actual product from this target value. See: quality loss function.

identity and access management (IAM)–A framework outlining business processes, policies, and technologies that defines and manages the roles and access rights for each user or user group within a system. An IAM also will lay out the circumstances that grant or deny these rights.

identity theft–The fraudulent use of personal information mainly to obtain financial gain.

idle capacity–The available capacity that is not currently required and is instead maintained to protect the system from disruptions. See: excess capacity.

idle inventory–The inventory generally not needed in a system of linked resources. From a theory of constraints perspective, idle inventory generally consists of protective inventory and excess inventory. See: excess inventory, productive inventory, protective inventory.

idle time–The time when resources (e.g., operators or machines) are available for use but are not producing product because of setup or maintenance requirements, lack of material, lack of tooling, or lack of scheduling.

IFB–Acronym for invitation for bid.

IFRS–Acronym for International Financial Reporting Standards.

IISE–Acronym for Institute of Industrial and Systems Engineers.

IMC–Acronym for intermodal marketing company.

immutable record–A document or file placed on legal hold for a specific reason, causing it to be locked to prevent modification or deletion.

impact effort matrix–A tool used to identify various solutions and determine which to implement, based on the potential impact and effort required. The solutions are classified into one of four quadrants, the most attractive being high impact with low effort and the least attractive being low impact with high effort.

imperfection–A quality characteristic's departure from its intended level or state. An imperfection does not affect the conformance of a product or service to its specification requirements or usability. See: blemish, defect, nonconformity.

implementation–In technology application, the act of setting up and configuring a system for operation. It concludes the system project with the exception of appropriate follow-up or post-installation review.

implied authority–The right of an agent, when directed by a principal to accomplish a task, to do what is reasonably necessary to accomplish it.

implied contract–A binding agreement inferred from the actions of the parties.

implied warranty–A warranty imposed on sellers beyond any express agreement in the contract.

implosion–The process of determining the where-used relationship for a given component. Implosion can be single-level, showing only the parents on the next higher level, or multilevel, showing the ultimate top-level parent. See: where-used list. Ant.: explosion.

import broker–Syn.: customs broker.

import license–An importing country's government document that provides an importer with the express authorization to import a particular product.

import merchant–An entity in another country that buys and takes title to goods for the purpose of reselling them. See: export trading company (ETC).

importer of record (IOR)–The entity responsible for ensuring that imported goods comply with local laws and regulations, for filing the documentation for duty entry, and for paying any associated import duties or taxes.

imports–Products brought into a country for consumption that were produced in another country.

imposed date–A fixed date given to an activity, usually "start no earlier than" or "finish no later than."

improve phase–One of the six sigma phases of quality. In this phase, the improvements to products and/or processes are adopted.

improvement program charter–A document detailing the structure of the improvement program including resources, program schedule, organization, deliverables, and expected benefits.

impulse response–A measure of how quickly an estimate or forecast changes when the underlying data used to develop the estimate has changed.

inactive inventory–1) Stock designated as in excess of consumption within a defined period. 2) Stocks of items that have not been used for a defined period.

inbound inventory–Goods delivered to a company's receiving dock in a warehouse or manufacturing plant.

inbound logistics–All activities related to the flow of materials and information from suppliers to a downstream facility.

inbound staging–An interim storage location for goods that have been received into a facility until they are put away. See: cross-docking, put-away.

inbound stockpoint–A defined location next to the place of use on a production floor. Materials are brought to the stockpoint as needed and taken from it for immediate use. Inbound stockpoints are used with a pull system of material control.

incentive arrangements–A contract between a buyer and seller that incorporates conditions designed to motivate the supplier to improve its performance in specific areas including on-time delivery, product quality, and customer satisfaction.

incentive contract–A contract in which the buyer and seller agree to share cost savings beyond the target cost established in the contract. If actual costs exceed the target, the parties share the additional cost up to a maximum level specified in the contract.

incentive pay system–A method of compensating employees based on their job performance.

incentive rate–In transportation, a discounted rate designed to convince a shipper to ship a higher volume in a particular load.

inclusive procurement–The practice of expanding an organization's supplier network by working with smaller suppliers and those with owners from minority or marginalized groups. These suppliers may be more innovative than larger suppliers and can help the organization to improve its brand image and meet regulatory requirements. See: diversity, equity, and inclusion (DEI).

income–Syn.: profit.

income statement–A financial statement summarizing the difference between revenues and expenses (i.e., the net income) over a specific period of time. See: balance sheet, funds flow statement, net income (loss).

incoming business–Order activity, such as number of orders, dollar value of orders, or quantity ordered, received from customers. This information is used in forecasting to compare the forecast with customers' actual demand, which may be different from the actual shipments because of conditions such as backorders or shipping delays.

in-control process–A process determined to be in a state of statistical control where sample data suggests that the variability of a specific measure is only due to random variation instead of an assignable cause. Ant.: out-of-control process.

Incoterms–A series of standardized trade terms for international transactions published by the International Chamber of Commerce that detail the responsibilities of the buyer and the seller in an international transaction.

in-country value (ICV)–A sustainable practice that aims to boost economic performance and support local industries by sourcing labor, materials, and services domestically in order to increase the country's gross domestic product. This often means that, in the solicitation process, local suppliers are given preference over international suppliers by assigning a higher value to local suppliers in the comparison and awarding process.

incremental analysis–An analytical approach that compares the cost incurred by each successive unit with the additional revenue the unit generates. Total profit is maximized at the volume where the incremental cost and revenue are equal.

incremental available-to-promise–Syn.: discrete available-to-promise.

incremental cost–1) A cost incurred in the process of manufacturing or assembling a component or finished good. 2) An additional cost resulting from a decision that is undertaken.

incremental utilization heuristic–Using a worker's full capacity by adding one task at a time (in priority order) up to the maximum capacity or waiting for the utilization to fall and then adding more tasks.

indented bill of material (BOM)–A type of multilevel BOM that depicts the highest-level parent subcomponents at the left margin and the components used to produce each parent underneath and to the right. Lower levels of materials and components are indented even farther to the right. See: bill of material (BOM), multilevel bill of material (BOM).

indented tracking–Tracing all lot numbers of components and ingredients used in a specific production batch through all levels of production.

indented where-used list–A listing of where-used information for a component in which the component is displayed at the left margin of the list and each parent item is indented underneath and to the right. The parents of these parent items also are indented underneath and to the right until the level-0 item is depicted. See: where-used list.

independent action–In transportation, the publication of a freight rate that differs from that of the rate bureau to which the publisher is a member. This is a permitted action.

independent demand–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.

independent float–In project management, the amount of float on an activity that does not affect float on preceding or succeeding activities. See: float, free float, total float.

independent project–A project which, whether or not it is accepted, does not eliminate other projects from eligibility. See: contingent project, mutually exclusive project.

independent trading exchange–A type of electronic marketplace owned by a third-party organization serving multiple industries without ties to any particular company. This exchange is a public site for buyers to purchase indirect materials and commodities from suppliers primarily on the basis of obtaining the goods for the lowest possible price. See private trading exchange (PTX).

index–A value used to express the relationship between a variable and the base value of that variable taken at a specified time. The base value is usually denoted as 100.

indicator–An index of business activities.

indifference point–The point at which two decision alternatives yield the same payoff (i.e., profit, cost, revenue, etc.).

indirect cost–A cost that is not directly incurred by a particular product unit, job, or operation. Indirect costs typically are allocated to products through the application of overhead rates. Examples of indirect costs include plant utilities, rent, and administrative salaries.

indirect labor–Work required to support production in general without being related to a specific product (e.g., floor sweeping).

indirect labor cost–The compensation paid to workers whose activities are not related to a specific product.

indirect materials–Syn.: supplies. See: facilitating product.

indirect procurement–The organization function responsible for sourcing goods and services that enable the organization to function but are not used in the production of products or services sold to customers. Examples include maintenance, repair, and operating (MRO) supplies; cleaning services; and corporate travel. Ant.: direct procurement.

indirect retailer–A retailer that sells products to the public but buys products indirectly through a third-party distributor rather than directly from the seller.

industrial buyer–An individual mainly responsible for purchasing materials and equipment used in the production of a finished good or in performing a service.

industrial engineering–The engineering discipline concerned with improving processes and systems through the design and implementation of integrated solutions incorporating people, equipment, materials, energy, and information. It combines the use of specialized knowledge in mathematics, physical sciences, and social sciences with general principles of engineering analysis and design to predict and evaluate the performance and results of the specified process or system design.

industrial facilities management–The installation and maintenance of the physical plant, its surroundings, and the physical assets of an organization.

industrial market–A market in which most or all customers are individuals or businesses that buy products to produce other goods and services. Syns.: business market, producer market. See: consumer market, government market, institutional market.

industrial revolution–A period of history when there is a global transition in business processes, such as toward the use of factories and machines and away from activities done by hand without mechanical assistance.

industrial truck–A common form of material handling equipment that uses a vehicle powered by hand, electricity, or propane. Industrial trucks are more flexible but slower and less constant than conveyors, and they are not in a fixed position. Common examples are forklifts and reach trucks.

industrial truck and tractor operator–A warehouse employee who uses heavy machinery to transport heavy materials around a warehouse, storage yard, factory, or construction site.

industry–A business category made up of companies providing a common product or service with similar business activities.

Industry 4.0–Also known as the Fourth Industrial Revolution, the technological changes, value chain integrations, and new business models development of the 21st century. The changes are driven by customer needs and mass customization requirements and enabled by innovation technologies, connectivity, and information technology (IT) integration.

industry analysis–A major study of an industry; its major competitors, customers, and suppliers; and the focus and driving forces within that industry.

industry structure type–Economic models of the types of competition faced by various firms. These types are: (1) Monopoly: Only one firm provides a particular product or service. The monopoly may be regulated or unregulated. (2) Oligopoly: A few companies dominate the market and maintain their position via high barriers to entry. The companies are interdependent and must consider the reactions of their rivals when making decisions. Prices in oligopolies are often higher than those in more competitive markets because of the market concentration. (3) Monopolistic competition: Many competitors offer partially differentiated products or services. Most competitors focus on market segments where they can meet customers' needs somewhat better than their competitors. (4) Pure competition: Many competitors offer undifferentiated products or services and must accept market equilibrium prices.

inefficiency risk–The risk of losing customers because another firm has lower costs, shorter lead times, or improved quality. See innovation risk.

infinite loading–Calculation of the capacity required at work centers in the time periods required regardless of the capacity available to perform this work. Syn.: infinite scheduling.

infinite scheduling–Syn.: infinite loading.

inflation–An ongoing rise in the overall level of prices. Inflation reduces the purchasing power of money.

informal culture–Organizational characteristics and relationships that are not part of the formal structure but that influence how the organization accomplishes its goals.

information–Data that has been interpreted and that meets the needs of one or more managers.

information distribution–Making needed data available to stakeholders in a timely manner.

information flow model–A diagram of the flow of information between sources and destinations, including the types of data and the method of access.

information leakage–The intentional or unintentional release of data to an unauthorized individual.

information system–Interrelated computer hardware and software along with people and processes designed for the collection, processing, and dissemination of information for planning, decision-making, and control.

information system architecture–A model of how the organization operates regarding information. The model considers four factors: (1) organizational functions, (2) communication of coordination requirements, (3) data modeling needs, and (4) management and control structures. The architecture of the information system should be aligned with and match the architecture of the organization.

information technology (IT)–The technology of computers, telecommunications, and other devices that integrate data, equipment, personnel, and problem-solving methods in planning and controlling business activities. IT provides the means for collecting, storing, encoding, processing, analyzing, transmitting, receiving, and printing text, audio, or video information.

information visibility–The availability and accessibility of information internally and between organizations.

INFORMS–A professional association for individuals in the analytics profession.

infrastructure–Elements of a strategy including decision rules, policies, personnel guidelines, and organizational structure.

Infrastructure as a Service (IaaS)–Cloud computing services that provide infrastructure to organizations via the internet as a subscription service.

ingredient–In the process industries, the raw material or component of a mixture. See: component.

initial public offering (IPO)–A firm's first sale of common stock to the public.

innovation risk–The risk of losing customers due to the financial requirements of innovation, because another firm creates more innovative products or is quicker to market, or because the innovation does not provide the intended result. See: inefficiency risk.

innovative product–A product that tends to have a high profit margin, is unique, has less competition, and has dynamic demand. Ant.: functional product.

in-process inventory–Syn.: work in process (WIP).

input–1) Work arriving at a work center or production facility. 2) Data or information entered into a process or system.

input control–Management of the release of work to a work center or production facility. See: input/output control (I/O control).

input rate capacity–Measurement that takes rates of different inputs and transforms them into a common unit to measure the input. See: capacity utilization.

input/output analysis–Syn.: input/output control (I/O control).

input/output control (I/O control)–A technique for capacity control in which planned and actual inputs and planned and actual outputs of a work center are monitored. Actual input is compared with planned input to identify when work center output might vary from the plan because work is not available at the work center. Actual output is also compared with planned output to identify problems within the work center. Syn.: input/output analysis. See: capacity control, input control, output control.

input/output devices–Modems, terminals, or various pieces of equipment used for manual, mechanical, electronic, visual, or audio entry to and from a computer.

insider threat–Authorized individuals using their access to steal or compromise data or systems.

insourcing–Using the firm's internal resources to provide goods and services. See: make-or-buy decision. Ant.: outsourcing.

inspection–Measuring, examining, testing, or gauging one or more characteristics of a good or service and comparing the results with specified requirements to determine whether conformity is achieved for each characteristic.

inspection order–An authorization to an inspection department or group to perform an inspection operation. Syn.: inspection ticket.

inspection ticket–Syn.: inspection order.

installed base–A measure of the number of units of a product or service that are actually in use, as opposed to market share, which only reflects sales over a particular period.

instantaneous receipt–The receipt of an entire lot-size quantity at once rather than over time.

Institute for Supply Management (ISM)–A nonprofit society for purchasing managers and others. ISM was formerly known as the National Association of Purchasing Management (NAPM).

Institute of Industrial and Systems Engineers (IISE)–A nonprofit educational organization whose members are interested in the field of industrial and system engineering. It was formerly called the Institute of Industrial Engineers (IIE).

institutional market–A market in which most or all customers are schools, hospitals, prisons, or other institutions that provide products and services to individuals who are under their care. See: consumer market, government market, industrial market.

instruction sheet–Syn.: routing.

intangible–A distinguishing feature, usually of services, that does not exist physically.

intangible costs–Those costs that are difficult to quantify, such as the cost of poor quality or of high employee turnover.

integral architecture–A type of product architecture in which all components and functions are interconnected to achieve the highest possible product performance. This integration results in a product with limited flexibility, and product modifications or upgrades may require a complete redesign. Ant.: modular architecture.

integrated business plan–An overall business plan generated by the integrated business planning process that aligns with the strategy, tactics, and execution plans; organization and functional accountabilities; and any risk management plans. See: integrated business planning (IBP).

integrated business planning (IBP)–A business process that integrates strategic, operational, and financial planning to maximize company profitability. The process drives decision-making across all aspects of the business by balancing customer demand, supply, and company resources. This is typically at an aggregate planning level with the ability to disaggregate to a more detailed level. The goal is to create an enterprise-wide operating plan. An IBP process typically builds upon the foundation of an established sales and operations planning (S&OP) process with continuous review meetings in each functional area. IBP may also include other advanced practices, such as scenario planning and supply chain risk management. See: sales and operations planning (S&OP), integrated business plan.

integrated carrier–A company that provides a variety of transportation services including ground, sea, air carriage, and freight forwarding.

integrated enterprise–A business or organization made up of individuals working together to make the organization a greater success than the sum of each individual's output. Integration includes increased communication and coordination among individuals and within and across teams, functions, processes, and organizations over time. See: cross-functional integration.

integrated internet marketing (I2M)–The use of internet facilities to sell products, influence stakeholder attitudes, and improve the company's image.

integrated logistics–The synchronization of the processes involved in obtaining and distributing materials to simultaneously meet multiple operational objectives such as responsiveness, efficiency, resource utilization, and quality.

integrated resource management (IRM)–Syn.: resource management.

integrated services digital network (ISDN)–International standard for using public phone lines to transmit voice and data over the same line.

integrating mechanism–A physical, organizational, or informational entity that allows people and functions to interact freely by transcending boundaries.

intellectual property–Various legal entitlements that attach to certain names, written and recorded media, and inventions.

intelligent agent–A program that interacts with its environment using sensors in order to gather and process information.

Intelligent supply–A strategy that impacts every component of the procurement function to source goods and services from leading suppliers at the best value while driving efficiencies in procurement operations, improving supplier relationships, and mitigating risks.

Intelligent supply analytics–The ability to use both value chain analytics and industry insights to move from retrospection to prediction by aggregating disparate data sources to predict cost and price fluctuations, demand patterns, and supplier- and country-related factors to more effectively manage end-to-end costs.

intelligent supply chain–The use of emerging and intelligent technologies such as artificial intelligence (AI), big data, and advanced analytics software within the supply chain to improve its value and efficiency. This is accomplished through increasing visibility, anticipating disruptions, rapidly reacting to changing customer priorities, and identifying opportunities.

interarrival time–Time between the arrival of two sequential customers or events.

interest–1) Financial share in a project or enterprise. 2) Periodic compensation for lending money. 3) In an economy study, synonymous with required return or the fee for the use of capital. 4) The cost for the use of capital. See: time value of money.

interest rate–The ratio of the interest payment to the principal for a given unit of time. It is usually expressed as a percentage of the principal. See: discount rate.

intermediate part–Material processed beyond raw material and used in higher-level items. See: component.

intermediately positioned warehouse–A warehouse located between customers and manufacturing plants to provide increased customer service and reduced distribution costs.

intermittent production–A form of manufacturing in which the jobs pass through the functional departments in lots, and each lot may have a different routing. See: job shop.

intermodal marketing companies (IMCs)–Organizations that are the intermediary for shippers and intermodal rail carriers.

intermodal transport–1) Shipments moved by different types of equipment, combining the best features of each mode. 2) The use of two or more different carrier modes in the through movement of a shipment. See: container on a flatcar (COFC), multimodal solutions.

internal analysis–Evaluating the internal strengths and weaknesses of an organization to determine its competencies and competitive advantage. See: SWOT analysis.

internal control–A policy and procedure, documentation, and plan for an organization that authorize transactions, safeguard assets, and maintain the accuracy of financial records.

internal customer–The recipient (person or department) of another person's or department's output (good, service, or information) within an organization. See: customer, external customer.

internal environment–The chosen domain or scope of activities within which an organization operates (e.g., the tasks associated with goods or services to be delivered by the organization). See: external environment, organizational environment.

internal failure cost–The cost of a defect in a product before it reaches the customer. Internal failure costs usually include rework, scrap, downgrades, reinspection, retesting, and process losses. See: failure cost.

internal rate of return–The rate of compound interest at which the company's outstanding investment is repaid by proceeds from the project. See: capital budgeting.

internal risk–A risk stemming from inside and under the control of an organization, such as performance or capability. See: SWOT analysis.

internal setup time–The time associated with elements of a setup procedure performed while the process or machine is not running. Ant.: external setup time.

internal supply chain–Activities within an organization involving sales, procurement, production, or logistics that function to produce a good or service, share information, and create an atmosphere of cooperation for serving the customer.

internal water carrier–Any carrier that operates on inland river channels, such as the Mississippi River System.

International Air Transport Association (IATA)–An international industry trade group that represents the interests of the airline industry.

International Financial Reporting Standards (IFRS)–A common global language for business affairs so that company accounts are understandable and comparable across international boundaries. As a result of growing international shareholding and trade, they are rules to be followed by accountants to maintain books of accounts that are comparable, understandable, reliable, and relevant whether the users are internal or external. See: generally accepted accounting principles (GAAP).

international freight forwarder–An entity that arranges and coordinates the transportation of goods from the production site or seller's storage facility to the customer's location in another country.

international logistics–All functions concerned with the movement of materials and finished goods on a global scale.

International Organization for Standardization (ISO)–An independent organization made up of cooperating institutes from 155 countries that has developed and published recognized global standards and certifications.

international procurement office (IPO)–A management approach that establishes a global presence for a company by providing localized supply management services in a region that is strategically important. This approach is a long-term commitment that takes advantage of a region's language and cultural capabilities to use trusted local staff to execute procurement activities that add value to the overall supply chain. Such tasks as local supplier development, contract negotiations, quality audits, and best practice operations provide reduced dependence on third parties and improve overall efficiency and costs.

international standards–Standards established by international standards–setting organizations to promote interoperability among operating environments.

International Traffic in Arms Regulations (ITAR)–U.S. regulations that control the export of items that have a military application, such as firearms, chemicals, and explosives.

internet of things (IoT)–An environment in which objects, animals or people are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. This allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer-based systems.

internet service provider (ISP)–A business or organization that sells access to the internet and related services to consumers via various technologies that enable users to browse websites and send and receive email. The ISP may also provide a combination of services, including internet transit, domain name registration and hosting, web hosting, and colocation.

interoperation time–The time between the completion of one operation and the start of the next.

interplant demand–One plant's need for a part or product that is produced by another plant or division within the same organization. Although it is not a customer order, it is usually handled by the master production scheduling system in a similar manner. See: interplant transfer.

interplant transfer–The shipment of a part or product by one plant to another plant or division within the corporation. See: interplant demand, transfer pricing.

interpolation–The process of finding values of data or a function between two known values. Interpolation may be performed numerically or graphically.

interrelationship digraph–A technique used to define how factors relate to one another. Complex multivariable problems or desired outcomes can be displayed with their interrelated factors. The logical and often causal relationships between the factors can be illustrated.

interrogate–To retrieve information from computer files by use of predefined inquiries or unstructured queries handled by a high-level retrieval language.

interrupt–A break in the normal flow of a computer routine such that the flow can be resumed from that point at a later time. An interrupt is usually caused by a signal from an external source.

interstate commerce–The movement of workers or property across one or more U.S. state lines for business purposes.

Interstate Commerce Commission (ICC)–A U.S. regulatory agency charged with enforcing regulations controlling railroads, motor carriers, pipelines, domestic water carriers, domestic surface freight forwarders, and brokers.

intranet–A privately owned network that makes use of internet technology and applications to meet the needs of an enterprise. It resides entirely within a department or company and provides communication and access to information, similar to the internet, for internal use only.

in-transit inventory–Material moving between two or more locations, usually separated geographically (e.g., finished goods being shipped from a plant to a distribution center (DC)).

in-transit lead time–The time between the date of shipment (at the shipping point) and the date of receipt (at the receiver's dock). Orders normally specify the date by which goods should be at the dock. Consequently, this date should be offset by in-transit lead time for establishing a ship date for the supplier.

intrastate commerce–The movement of persons or property between points within a single U.S. state for business purposes.

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

intrinsic motivation–Motivation to perform a task due to the inherent satisfaction, rather than a desire for an external reward or specific outcome. See: extrinsic motivation.

inventory–Items or stock used to support production (raw materials and work in process (WIP) items), supporting activities (maintenance, repair, and operating supplies), and customer service (finished goods and spare parts). Demand for inventory may be dependent or independent. Inventory functions are anticipation, hedge, cycle (lot size), fluctuation (safety, buffer, or reserve), transportation (pipeline), and service parts. Total inventory value is represented as a current asset on an organization's balance sheet.

inventory accounting–The branch of accounting dealing with valuing inventory. Inventory may be recorded or valued using either a perpetual or a periodic system. A perpetual inventory record is updated frequently or in real time, while a periodic inventory record is counted or measured at fixed time intervals (e.g., every two weeks or monthly). Both recording systems use the last in, first out; first in, first out; or average costs inventory valuation method.

inventory accuracy–A metric that compares the actual on-hand quantity with the recorded balance in the system. This metric usually is measured as the percent of items with inventory levels that fall within an allowable tolerance. Target values usually are 95 percent to 99 percent, depending on the value of the item. For logistics operations, it is sometimes measured as the number of storage locations with errors divided by the total number of storage locations.

inventory adjustment–A change made to an inventory record to correct the balance in order to bring it in line with actual physical inventory balances. The adjustment either increases or decreases the item record on-hand balance.

inventory buffer–Inventory used to protect the throughput of an operation or the schedule against the negative effects caused by delays in delivery, quality problems, delivery of an incorrect quantity, and so on. Syn.: inventory cushion. See: fluctuation inventory, safety stock.

inventory control–The activities and techniques of maintaining the desired levels of items, whether raw materials, work in process (WIP), or finished products, and storing them properly to enable effective tracking and ensure their usable condition. Syn.: material control.

inventory conversion period–The time period needed to produce and sell a product, measured from procurement of raw materials to the sale of the product.

inventory cost–The cost associated with ordering and holding inventory. See: carrying cost, ordering cost.

inventory cushion–Syn.: inventory buffer.

inventory cycle–1) The length of time between two consecutive replenishment shipments. 2) In cycle counting, the length of time between counts of the same item.

inventory cycle counting–See: cycle counting.

inventory driver–A condition that would cause a company to purchase and hold inventory.

inventory effectiveness index–A system to identify areas of improvement in inventory, such as highlighting non-value-added inventory so it can be sold or written off to improve working capital.

inventory investment–The monies consumed for inventory assets currently on hand. See: inventory valuation.

inventory issue–1) Items released from an inventory location for use or sale. 2) The inventory record transaction reducing the inventory balance by the amount released. Syn.: issue.

inventory management–The area of business management concerned with planning and controlling inventories, such as warehouse and material handling processes.

Inventory management system–A software application that provides inventory information, such as quantity, location, and status, that helps a business make better decisions about how much inventory to store and maintain for future orders. See: inventory management, inventory optimization.

inventory optimization–A computer application that can find optimal inventory strategies and policies related to customer service and return on investment over multiple echelons of a supply chain. The optimization happens simultaneously across all inventory stocking points in the supply chain and accounts for random variability. This practice is traditionally used for the replenish-to-forecast process as an alternative to pull-based replenishment, but it also can be used to calculate reorder points. See: inventory management system.

inventory ordering system–An inventory model for the replenishment of inventory. Independent demand inventory ordering systems include fixed reorder cycle, fixed reorder inventory model, optional replenishment, and hybrid models, among others. Dependent demand inventory ordering systems include material requirements planning (MRP), kanban, and drum-buffer-rope.

inventory planner–Syn.: material planner.

inventory planning–The activities and techniques of determining the desired levels of items, whether raw materials, work in process (WIP), or finished products (including order quantities and safety stock levels). Syn.: material planning.

inventory policy–A statement of a company's goals and approach to the management of inventories. This includes areas such as stocking levels, asset valuation, ABC classifications, replenishment policies, and review cycles.

inventory pooling–The act of holding inventory in a single location instead of multiple locations.

inventory receipt–An inventory transaction that records the receipt or arrival of inventory from a purchase or production order into a physical location by increasing the inventory on-hand balance by the received quantity.

inventory reconciliation–The process of matching records in the inventory system with the physical quantity on-hand.

inventory record–A record that contains the transactions or movement of a particular material, product, or item.

inventory reserve–1) An accounting entry that represents a deduction from earnings for the purpose of fairly and reasonably representing the value of inventoried assets on a balance sheet. The inventory reserve is used to make up for the fact that all inventory will not be sold at the cost to the firm. 2) A term relating to the allowance account to reduce inventory from cost to market value by applying the lower of cost or market value rule. The reserve amount is usually calculated from inventory sheets for the specific items.

inventory return–An item returned to the manufacturer as defective, obsolete, overages, and so forth. An inventory item record transaction records the return or receipt into physical stores of materials for disposition.

inventory shrinkage–Reductions of actual quantities of items in stock, in process, or in transit. The loss may be caused by scrap, theft, deterioration, evaporation, and so forth. Syn.: shrinkage.

inventory tax–Tax based on the value of inventory on hand at a particular time.

inventory turnover–The number of times that an inventory cycles, or turns over, during a time period, such as a year. A frequently used method to compute inventory turnover is to divide the annual cost of sales by the average inventory level. For example, an annual cost of sales of $21 million divided by an average inventory of $3 million means that inventory turned over seven times. Syns.: inventory turns, turnover. See: inventory velocity.

inventory turns–Syn.: inventory turnover.

inventory usage–The value or the number of units of an inventory item consumed during a period of time.

inventory valuation–The value of the inventory at either its cost or its market value. There are a variety of ways to calculate the value of inventory to establish the cost of goods sold (COGS). Because inventory value can change with time, the age of the inventory may also be taken into consideration. See: average cost system; first in, first out (FIFO); inventory investment; last in, first out (LIFO).

inventory velocity–The speed with which inventory passes through an organization or supply chain at a given point in time as measured by inventory turnover. See: inventory turnover.

inventory visibility–The extent to which inventory information is shared within a firm and with supply chain partners.

inventory write-off–A deduction of inventory dollars from the financial statement because the inventory is of less value. An inventory write-off may be necessary because the value of the physical inventory is less than its book value or because the items in inventory are no longer usable.

invitation for bid (IFB)–Syn.: request for proposal (RFP). See: competitive bid.

invoice–A document stating what was sold to the buyer, including prices, quantities, payment terms, and any additional costs.

IOR–Acronym for importer of record.

IoT–Acronym for the internet of things.

IPO–1) Acronym for initial public offering. 2) Acronym for international procurement office.

IRM–Acronym for integrated resource management.

irregular maintenance–Syn.: breakdown maintenance.

ISDN–Acronym for integrated services digital network.

Ishikawa diagram–Syn.: cause-and-effect diagram.

island of automation–Stand-alone automation (e.g., robots, CAD/CAM systems, or numerical control machines) that are not connected to a cohesive system.

ISO–Acronym for International Organization for Standardization.

ISO 14000 family of standards–A series of generic environmental management standards developed by the International Organization for Standardization (ISO) that provide structure and systems for managing environmental compliance with legislative and regulatory requirements and affect every aspect of a company's environmental operations.

ISO 22301:2019–An international standard that specifies requirements for setting up and managing an effective business continuity management system. The standard was developed by the International Organization for Standardization (ISO).

ISO 26000:2010–An international standard developed by the International Organization for Standardization (ISO) to assist organizations in contributing to sustainable development beyond legal compliance through a common understanding of social responsibility.

ISO 28000:2022–An international standard developed by the International Organization for Standardization (ISO) that specifies the requirements for a security management system, including those aspects critical to security assurance of the supply chain.

ISO 31000:2018–A standard developed by the International Organization for Standardization (ISO) that outlines principles and a set of guidelines to manage risk in any endeavor. The standard includes guidelines for understanding risk, developing a risk management policy, integrating risk management into organizational processes (including accountability and responsibility), and establishing internal and external risk communication processes.

ISO 50001:2018–An international standard developed by the International Organization for Standardization (ISO) that defines the requirements for designing, implementing, and maintaining an energy management system. It includes documentation, reporting, and procurement guidance.

ISO 73:2009–An international standard that provides the definitions of generic terms related to risk management. It aims to encourage a mutual and consistent understanding of and a coherent approach to the description of activities relating to the management of risk and the use of uniform risk management terminology in processes and frameworks dealing with the management of risk.

ISO 9000:2015–A set of international standards about quality management and quality assurance developed to help companies effectively document the quality system elements to be implemented to maintain an efficient quality system. The standards, initially published in 1987, are not specific to any particular industry, product, or service. The standards were developed by the International Organization for Standardization (ISO).

ISO 9001:2015–A global standard for quality management focused on establishing processes and training employees to consistently deliver flawless products and services to customers.

ISO 9004:2018–A set of guidelines consistent with the ISO 9000:2015 Series Standards that organizations can use to achieve sustained overall success through continuous improvement activities.

ISO certification/registration–The independent audit of an organization by a third party against a recognized management system standard, such as those developed by the International Organization for Standardization (ISO). Once compliance to the relevant standard and certification is achieved by the organization, the third party (referred to as the certification body or registrar) issues a certificate valid for three years and visits annually to ensure maintenance of the management system.

isolation–The determination of the location of a failure through the use of accessory support and diagnostic equipment.

ISP–Acronym for internet service provider.

issue–Syn.: inventory issue.

issue cycle time–The time required to generate a requisition for material, pull the material from an inventory location, and move it to its destination.

IT/OT convergence–The integration of data from information technology (IT) systems that process information about manufacturing or logistics with operational technology (OT) systems that monitor and control devices and processes.

item–Any unique manufactured or purchased part, material, intermediate, subassembly, or product.

item demand–Demand disaggregated into specific configurations of goods or services. See: item.

item master–Syn.: item record.

item number–A number that serves to uniquely identify an item. Syns.: part number, product number, stock code, stock number.

item rationalization–An inventory-reduction practice that helps determine which items can be terminated through a cost-of-sales analysis that reveals low sales. Rationalization decisions also can be done at a product family strategic level. Syn.: stock keeping unit (SKU) rationalization.

item record–The master record for an item that typically contains identifying and descriptive data and control values (lead times, lot sizes, etc.).I It may also provide data about inventory status, requirements, planned orders, and costs. Item records are linked by bill-of-material records (or product structure records), thus defining the bill of material (BOM). Syns.: item master, part master record, part record.

J

Java–A general-purpose computer language. Java is an object-oriented language that can run on any platform.

jidoka–The Japanese term for the practice of stopping the production line when a defect occurs.

jig–A device that holds a piece of work in a desired position and guides the tool or tools that perform the necessary operations.

jishuken–A Japanese word meaning voluntary study groups.

JIT–Acronym for just in time.

job–1) The combination of tasks, duties, and responsibilities assigned to an individual employee and usually considered his or her work assignment. 2) The work to be performed on a work order.

job analysis–A process of gathering information about important task-oriented activities and work requirements for employees through observation, interview, or recording systems.

job costing–A cost accounting system in which costs are assigned to specific jobs. This system can be used with either actual or standard costs in the manufacturing of distinguishable units or lots of products. Syn.: job order costing.

job description–A formal statement of duties, qualifications, and responsibilities associated with a particular job.

job design–The function of describing a job with respect to its content and the methods to be used. Criteria such as the degree of job specialization, job enrichment, and job enlargement are useful in designing work content.

job enlargement–An increase in the number of tasks that an employee performs. Job enlargement is associated with the design of jobs, particularly production jobs, and its purpose is to reduce employee dissatisfaction. See: job enrichment.

job enrichment–An extension of job enlargement in which the number of tasks that an employee performs increases and the employee has a corresponding increase in the control over those tasks. See: job enlargement.

job grade–A form of job evaluation that assigns jobs to predetermined job classifications according to the job's relative worth to the organization. Pay scales are usually set for each job grade. See: labor grade.

job lot–A specific quantity of a part or product that is produced at one time.

job order–Syn.: manufacturing order.

job order costing–Syn.: job costing.

job progress chart–Syn.: Gantt chart.

job rotation–The practice of an employee periodically changing job responsibilities to provide a broader perspective and a view of the organization as a total system to enhance motivation and provide cross-training.

job sequencing rule–A set of priorities and conditions that specify the order in which jobs are processed to meet objectives such as reducing idle time or minimizing lateness. See: dispatching rule.

job shop–1) An organization in which similar equipment is organized by function. Each job follows a distinct routing through the shop. 2) A type of manufacturing process used to produce items to each customer's specifications. Production operations are designed to handle a wide range of product designs and are performed at fixed plant locations using general-purpose equipment. Syn.: jobbing. See: flow shop, intermittent production, project manufacturing.

job shop layout–Syn.: functional layout.

job shop scheduling–The manufacturing planning and control techniques used to sequence and prioritize production quantities across operations in a job shop.

job status–A periodic report showing the plan for completing a job (usually the requirements and completion date) and the progress of the job against that plan.

job ticket–Syn.: time ticket.

jobbing–Syn.: job shop.

joint order–An order on which several items are combined to obtain volume or transportation discounts. See: joint replenishment.

joint rate–A rate for a route involving two or more carriers to move a shipment.

joint replenishment–The coordination of the lot sizing and order release decisions for related items and treating them as a family of items. The objective is to achieve lower costs from ordering, setup, shipping, and quantity discount economies. This term applies equally to joint ordering and to composite part (group technology (GT)) fabrication scheduling. See: joint order, multiple-item lot-sizing model.

joint venture–A separate entity created by two or more organizations through shared ownership, risk, and returns to accomplish a specific business objective.

judgment items–Those inventory items that cannot be effectively controlled by algorithms because of age (new or obsolete product) or management decision (promotional product).

Juran Trilogy–Syn.: quality trilogy.

jurisdiction–The authority of a governmental agency to undertake its activities.

jury of executive opinion–A forecast given by a group of executives who are knowledgeable about the industry, competition, and the firm. See qualitative forecasting technique.

just-in-time (JIT) manufacturing–A philosophy of manufacturing based on planned elimination of all waste and on continuous improvement of productivity. The primary elements of JIT manufacturing are to have only the required inventory when needed; to improve quality to zero defects; to reduce lead times by reducing setup times, queue lengths, and lot sizes; to incrementally revise the operations themselves; and to accomplish these activities at minimum cost. In the broad sense, it applies to all forms of manufacturing—job shop, process, and repetitive—and to many service industries as well. Syns.: short-cycle manufacturing, stockless production, zero inventories.

just-in-time (JIT) purchasing–The synchronized acquisition and delivery of materials to a production facility as they are required for use. This type of purchasing uses few suppliers who have long-term commitments with the organization. Long-term contracts are used, which enable the purchaser to develop and certify the quality process at the supplier.

K

kaizen–The Japanese term for improvement. Kaizen refers to continuing improvement involving everyone—managers and workers. In manufacturing, kaizen relates to finding and eliminating waste in machinery, labor, or production methods. See: continuous process improvement (CPI).

kaizen blitz–A rapid improvement of a limited process area, such as a production cell. Workers in the area or cell use innovative thinking to eliminate non-value-added work and to immediately implement the changes within a week or less. Ownership of the improvement by the area work team and the development of the team's problem-solving skills are additional benefits. See: kaizen event.

kaizen event–A focused process improvement project carried out by a cross-functional team designed to achieve specific outcomes in a targeted work area over a short period of time. The kaizen event is an implementation arm of a lean manufacturing program. See: kaizen blitz.

kanban–A method of just-in-time (JIT) production that uses standard containers or lot sizes with a single card (or other signaling device) attached to each. It is a pull system in which work centers signal that they wish to withdraw parts from feeding operations or suppliers. The term is often used synonymously for the specific scheduling system developed and used by the Toyota Motor Corporation in Japan. See: move card, production card, synchronized production.

kata–A set of procedural sequences involving thinking and behavior patterns that when routinely repeated creates an environment of continuous improvement.

keiretsu–A form of cooperative relationship among companies in Japan in which the companies largely remain legally and economically independent even though they work closely in various ways such as financial backing. A member of a keiretsu generally owns a limited amount of stock in other member companies. A keiretsu generally forms around a bank and a trading company, but distribution (supply chain) keiretsu alliances have been formed of companies ranging from raw material suppliers to retailers.

key performance indicator (KPI)–1) A financial or nonfinancial measure that is used to define and assess progress toward specific organizational goals and that typically is tied to an organization's strategy and business stakeholders. A KPI should not be contradictory to other departmental or strategic business unit performance measures. 2) A metric used to measure the overall performance or state of affairs. Supply Chain Operations Reference (SCOR) level 1 metrics are considered KPIs.

key points–An important operations step in which at least one of the following occurs: (1) A crucial process step is carried out that can ultimately make or break the job; (2) safety is involved; and/or (3) the step is made easier to do. The step also is part of standardized work.

key success factors–The product attributes, organizational strengths, and accomplishments with the greatest impact on future success in the marketplace.

kit–1) The components of a parent item that have been pulled from stock and prepared for movement to a production area or shipment to a customer for final assembly. 2) A group of repair parts to be shipped with an order. Syn.: staged material.

kitting–The process of constructing and staging kits.

knowledge creation–The propensity for generating knowledge.

knowledge management–An integrated approach used by organizations to capture, share, develop, and use organizational knowledge. This information is used to more effectively produce product, interface with customers, and navigate through competitive markets.

knowledge management tool–An application that gathers, organizes, stores, and shares information quickly throughout the organization to improve decision-making.

knowledge worker–A worker who creates value for the organization through their experience, critical-thinking abilities, and interpersonal skills.

knowledge-based system–A software application that employs knowledge of the structure of relations and reasoning rules to solve problems by generating new knowledge from the relationships about the subject.

KPI–Acronym for key performance indicator.

Kraljic matrix–A tool used to segment suppliers and develop different procurement strategies according to the dimensions of risk and profitability. Risk relates to the likelihood of unexpected events that could disrupt supply chains, and profitability describes the impact a supply item can have on the bottom line.

L

L/C–Acronym for letter of credit.

L4L–Acronym for lot-for-lot.

labor claim–A factory worker's report that lists the jobs an employee worked on (number of pieces, number of hours, etc.) and often the amount of money to which the employee is entitled. A labor claim is usually made on a labor chit or time ticket. Syns.: labor ticket, labor voucher.

labor cost–The dollar amount of labor performed during manufacturing. This amount is added to direct material cost and overhead cost to obtain total manufacturing cost.

labor efficiency–The average of worker efficiency for all direct workers in a department or facility. Syn.: worker efficiency.

labor efficiency variance–The difference between the actual number of hours worked minus the standard number of hours worked, multiplied by the standard labor wage rate. The variance is unfavorable if the actual hours exceed the standard hours. Syn.: labor usage variance.

labor grade–A grouping of employee positions based on comparable required skills, responsibilities, and authority, which justify similar compensation. See: job grade, skill-based compensation, skills inventories.

labor productivity–A partial productivity measure in which the rate of output of a worker or group of workers per unit of time is compared with an established standard or rate of output. Labor productivity can be expressed as output per unit of time or output per labor hour. See: machine productivity, productivity.

labor rate variance–The sum of the actual wage rate minus the standard wage rate, multiplied by the actual number of labor hours. The variance is unfavorable if the actual rate is greater than the standard rate.

labor standard–Under normal conditions, the quantity of worker time required to complete a product, process, or task.

labor ticket–Syn.: labor claim.

labor usage variance–Syn.: labor efficiency variance.

labor voucher–Syn.: labor claim.

laboratory order–Syn.: experimental order.

labor-intensive–When an operation has more expenditures on labor than capital. Ant.: capital-intensive.

lading–The cargo being transported by a vehicle.

lag capacity strategy–Delaying the addition of capacity until the firm is operating at or beyond full capacity. This keeps unit costs minimized by working at full capacity but risks not satisfying total demand.

laid-down cost–The sum of the product and transportation costs. The laid-down cost is useful in comparing the total cost of a product shipped from different supply sources to a customer's point of use. See: landed cost.

LAN–Acronym for local area network.

land bridge–The transportation of goods across an ocean, then over land using rail, and then across another ocean to its destination as a shorter and/or cheaper alternative to ocean routes that must travel through canals or around continents. See: micro-land bridge, mini-land bridge.

landed cost–This cost includes the product cost plus the costs of logistics, such as warehousing, transportation, and handling fees, as well as customs and duty fees. See: laid-down cost.

lap phasing–Syn.: operation overlapping.

LASH–Acronym for lighter aboard ship.

last in, first out (LIFO)–A method of inventory valuation for accounting purposes that assumes that the most recently received (last in) items are the first to be used or sold (first out) for costing purposes, but this behavior does not necessarily match the physical movement of specific items. See: average cost system; first in, first out (FIFO).

last-mile delivery–A term referring to the transportation of goods from a distribution hub to the final delivery destination or the door of the customer.

late finish date (LF)–In the critical path method of project management, the last date upon which a given activity can be completed without delaying the completion date of the project.

late order–Syn.: past-due order.

late start date (LS)–In the critical path method of project management, the last date upon which a given activity can be started without delaying the completion date of the project.

lateness–Delivery date minus due date. Lateness may be positive or, in the case of early jobs, negative. See: earliness, tardiness.

lateral collaboration–The ability to work effectively and share information with colleagues across multiple departments, teams, or organizational levels.

launch phase–The last phase of product development in which the product or service is introduced into the market.

law of diminishing marginal returns–A principle stating that as the quantity of a variable factor applied to a fixed factor is increased, the additional units of the variable factor will result in smaller and smaller increases in output. See: marginal product.

law of variability–A principle stating that as variability in a process or in the items being processed increases, the productivity of the process decreases.

layoff–The process by which employees who are not needed for some extended amount of time are given notice that their services are being discontinued. Benefits may or may not continue during a layoff.

layout–Physical arrangement of resources or centers of economic activity (machines, groups of people, workstations, storage areas, aisles, etc.) within a facility. Layout types include product (linear or line), functional (job shop or process), cellular, and fixed position.

LBO–Acronym for leveraged buyout.

LCA–Acronym for life cycle assessment.

LCC–Acronym for least changeover cost.

LCL–1) Acronym for less-than-container-load or less than carload (lot shipment). 2) Acronym for lower control limit.

LDI–Acronym for logistics data interchange.

lead capacity strategy–Adding capacity to a resource in anticipation of increased future demand to ensure the ability to satisfy market demand when the increase occurs.

lead logistics provider (LLP)–An organization that oversees the third-party logistics (3PL) operations of its clients. See: fourth-party logistics (4PL).

lead time–1) A span of time required to perform a process (or series of operations). 2) In a logistics context, the time between recognition of the need for an order and the receipt of goods. Individual components of lead time can include order preparation time, queue time, processing time, move or transportation time, and receiving and inspection time. Syn.: total lead time. See: manufacturing lead time, purchasing lead time.

Leadership in Energy and Environmental Design (LEED® standards)–A standard rating system that assesses the environmental sustainability of a new building or major renovation based on five criteria: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

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

lead time alert–1) A signal that the actual lead time may exceed the planned or expected lead time. 2) An alert or warning generated by a lead time managed (LTM) part. An alert will be triggered whenever the part enters a different zone in its buffer. The part progresses through the green, yellow and red zones, which represent increasing criticality.

lead time alert zone–The buffer zone associated with the portion of the lead time that designates time periods when various lead time alerts are triggered.

lead time managed (LTM) part–A critical component with a long lead time but not sufficient demand volume to warrant holding in inventory. Organizations must pay special attention to the status of these parts during the order cycle to ensure they are available when needed.

lead time offset–A technique used in material requirements planning (MRP) in which a planned order receipt in one time period requires the release of that order in an earlier time period based on the lead time for the item. Syns.: component lead time offset, offsetting.

lead time scheduling–Development of a schedule of start and completion times of planned operations for a manufacturing order by calculation of the lead time. The calculation includes the duration of all operations, interoperation times, and order administration times. See: back scheduling, central point scheduling, forward scheduling, probable scheduling.

lean–Syn.: lean production.

lean enterprise–An organization that applies lean principles and methodologies across all its processes to increase customer value and eliminate non-value-added activities and other forms of waste.

lean manufacturing–Syn.: lean production. See: manufacturing philosophy.

lean metric–A quantitative measurement of performance of a process, team, or the organization overall that can be used to guide improvement efforts toward reducing waste, enhancing quality, and increasing efficiency. Lean metrics take a balanced approach, enabling organizations to measure their performance relative to the needs of their customers.

lean production–A philosophy of production that emphasizes the minimization of the amount of all the resources (including time) used in the various activities of the enterprise. It involves identifying and eliminating non-value-adding activities in design, production, supply chain management, and customer management. Lean producers employ teams of multiskilled workers at all levels of the organization and use highly flexible, increasingly automated machines to produce volumes of products in potentially enormous variety. Lean production contains a set of principles and practices to reduce costs through the relentless removal of waste and through the simplification of all manufacturing and support processes. Syns.: lean, lean manufacturing.

Lean Six Sigma (LSS)–A methodology that combines the improvement concepts of lean and six sigma. It uses the seven wastes of lean and the define, measure, analyze, improve, control (DMAIC) process from six sigma and awards recognition of competence through judo-style belts.

learning curve–A graph depicting the relationship between the number of times workers repeat tasks and the amount of time it takes them to complete each task. As workers perform a task more often, their performance improves and they take less time to complete subsequent iterations of the task. Syn.: experience curve.

learning management system (LMS)–A software system for delivering and managing education and training within an organization.

learning organization–1) A group of people who have woven a continuous, enhanced capacity to learn into the corporate culture. 2) An organization in which learning processes are analyzed, monitored, developed, and aligned with competitive goals.

least changeover cost (LCC)–A sequencing rule in which jobs are processed in the order that minimizes the total cost of machine changeovers.

least total cost–A dynamic lot-sizing technique that determines the order quantity by comparing the ordering (or setup) costs and the carrying cost for various lot sizes and selects the lot size in which these costs are most nearly equal. See: discrete order quantity, dynamic lot sizing, part period balancing (PPB).

least unit cost–A dynamic lot-sizing technique that adds ordering (or setup) costs and carrying cost for each trial lot size and then divides by the number of units in the lot size. Ultimately, the lot size with the lowest unit cost is chosen. See: discrete order quantity, dynamic lot sizing.

least-squares method–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.

leg–A portion of a complete trip.

legacy system–An old business application often running on antiquated software that interfaces poorly with other applications but may continue to be used because it is too expensive to replace.

legal environment–The governmental restrictions placed on an organization regarding the goods and services provided by the business, such as environmental regulations, export or import restrictions, safety regulations, and mandated deregulations.

less-than-container/carload (LCL)–A shipment that occupies less than the maximum cubic or weight capacity of a container and therefore is shipped in the same container with other LCL cargo. As such, these shipments do not qualify for carload quantity rate discounts. See: less-than-truckload (LTL).

less-than-truckload (LTL)–1) A shipment of insufficient weight (typically less than 10,000 pounds) to qualify for a truckload (TL) quantity rate discount. See: less-than-container/carload (LCL). 2) A segment of the trucking industry used to transport smaller shipments (generally between 150 and 15,000 pounds) on mixed trailers hauling freight from multiple shippers.

letter of credit (L/C)–An assurance issued by an importer's bank that guarantees payment to the exporter as long as the transaction documents meet the terms and conditions established in the L/C. This method of payment for international transactions protects the exporter from the importer's nonpayment for the goods and protects the importer since no payment is made to the exporter until the goods are shipped in accordance with the terms of the L/C.

level–A code applied to every part or assembly in a product structure to signify the relative point at which that part or assembly is used. Often end-items are assigned level 0, and the components and subassemblies that go into the end-items are assigned level 1. The components and subassemblies that go into the level 1 items are assigned level 2, and so on. See: low-level code.

level loading–Syn.: load leveling.

level of effort (LOE)–In project management, a support activity (e.g., managing stakeholders, communicating with customers, etc.) that is not easily measured by discrete accomplishment and often is estimated using expert judgment, analogies from tasks in previously completed projects, or statistical parametric estimation methods.

level of service–Syn.: service level.

level production method–A production planning method that maintains a stable production rate while varying inventory levels to meet demand. Syns.: level strategy, production leveling. See: level schedule.

level production schedule–Syn.: level schedule.

level schedule–1) In traditional management, a production schedule or master production schedule (MPS) that generates material and labor requirements that are as evenly spread over time as possible. Finished goods inventories buffer the production system against seasonal demand. See: level production method. 2) In just in time, a level schedule (usually constructed monthly) in which each day's customer demand is scheduled to be built on the day it will be shipped. A level schedule is the output of the load-leveling process. Syn.: level production schedule. See: load leveling.

level strategy–Syn.: level production method.

leverage-capital structure ratio–An indicator of whether or not a company has the ability to retire its long-term debts. This ratio assesses the financial risk associated with a firm's capital structure.

leveraged buyout (LBO)–A takeover of a company using borrowed funds. The assets of the acquired company are used as partial collateral for the loan.

LF–Acronym for late finish date.

liability–An accounting or financial term (balance sheet classification of accounts) representing a debt or obligation owed by a company to creditors. Liabilities may have a short-term time horizon, such as accounts payable (AP), or a longer-term obligation, such as mortgage payable or bonds payable. See: asset, balance sheet, debt, owner's equity.

license plate number (LPN)–A unique identifier that represents a group of items in a single container such as a pallet, product carton, or trailer that can be tracked via a barcode or RFID tag. LPNs enable movement and tracking of the entire group of items without individually scanning each one.

licensing–Paying a fee for permission to manufacture and sell a product created by another.

life cycle analogy method–A method for forecasting the life cycle of a new product or service, including the introduction, growth, maturity, and decline phases. This qualitative technique estimates demand levels and the timing of each phase of the product life cycle.

life cycle analysis–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.

life cycle assessment (LCA)–The evaluation of the human and environmental impacts of a product, process, or service throughout its life, including energy, material, and environmental inputs and outputs. LCA includes raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling. Syn.: life cycle analysis. See: cradle-to-cradle.

life cycle costing–In evaluating alternatives, the consideration of all costs—including acquisition, operation, and disposition costs—that will be incurred over the entire time of product ownership.

life testing–The simulation of a product's life under controlled real-world conditions to see if it holds up and performs as required.

lifetime buy–A process for purchasing potential discontinued components or products to support the remaining life cycle of a product.

LIFO–Acronym for last in, first out.

lighter–A short-haul flat-bottomed barge.

lighter aboard ship (LASH)–The practice of loading barges onto a larger vessel for transportation between different ports. The large vessels have their own cranes that facilitate loading and unloading of the barges without the need to utilize port equipment, thereby increasing the accessibility of smaller ports.

lightless plant–Syn.: dark factory.

LIMIT–Acronym for lot-size inventory management interpolation technique.

limited access–Securing inventory, usually in a locked environment, to protect it from theft and to help improve inventory count accuracy.

limited liability company–In the United States, a business organization that, as with a corporation, enjoys limited liability yet is not a taxable entity.

limited life material–Material having a finite shelf life.

limited partnership–A partnership having two types of partners: (1) limited partners who contribute assets to the company without participating in management and (2) general partners who manage the company and are responsible for all debts.

limiting operation–The operation with the least capacity in a series of operations with no alternative routings. The capacity of the total system can be no greater than the limiting operation, and as long as this limiting condition exists, the total system can be effectively scheduled by scheduling the limiting operation and providing this operation with proper buffers. See: bottleneck, protective capacity, protective inventory.

line–1) A specific physical space for the manufacture of a product that is represented by a straight line in a flow shop layout. This may be a series of pieces of equipment connected by piping or conveyor systems. 2) A type of manufacturing process used to produce a narrow range of standard items with identical or highly similar designs. Production volumes are high, production and material handling equipment is specialized, and all products typically pass through the same sequence of operations. See: assembly line.

line balancing–1) The balancing of the assignment of the tasks to workstations in a manner that minimizes the number of workstations and minimizes the total amount of idle time at all stations for a given output level. In balancing these tasks, the specified time requirement per unit of product for each task and its sequential relationship with the other tasks must be considered. See: uniform plant loading. 2) A technique for determining the product mix that can be run on an assembly line to provide a consistent flow of work through that assembly line at the planned line rate.

line efficiency–A measure of actual work content versus cycle time of the limiting operation in a production line. Line efficiency (as a percentage) is equal to the sum of all station task times divided by the longest task time multiplied by the number of stations. In an assembly line layout, the line efficiency is 100 percent minus the balance delay percentage.

line fill rate–The percentage of line items on customer orders that are fulfilled completely. See: fill rate.

line functions–Areas involved in daily operations. For example, logistics line functions include inventory control, order processing, warehousing, and packaging.

line haul–The portion of a transportation journey that moves between two transportation terminals. It is distinguished from and excludes the pickup and delivery portions of a journey used to acquire or distribute less-than-truckload (LTL) freight. For motor carrier transportation, the shipment is loaded in a semi-permanent trailer configuration that maximizes the amount of freight that each driver can legally haul over that portion of the journey. This may involve hauling multiple trailers.

line haul cost–The cost of carrier operations to move a container of freight, including drivers' wages and usage depreciation. These vary with the cost per mile, the distance shipped, and the weight moved. This cost is commonly expressed in relation to the hundredweight (cwt) of the shipment.

line item–One item on an order, regardless of quantity.

line loading–The loading of a production line by multiplying the total pieces by the rate per piece for each item to develop a finished schedule for the line.

line manager–A manager involved in managing a department that is directly involved in making a product.

line manufacturing–Repetitive manufacturing performed by specialized equipment in a fixed sequence. See: assembly line.

line of balance planning–A graphical project planning method that schedules activities to be completed according to a desired cycle time or rate of production. The graph provides a comparison of actual versus planned activity progress to highlight imbalances.

line of credit–A contract that enables a company to borrow funds at any time up to a predetermined limit.

line scrap–The value of work in process (WIP) and raw materials that are scrapped because of faulty processing as a percentage of the total value of production at standard cost.

linear decision rule–A modeling technique using simultaneous equations (e.g., the establishment of aggregate workforce levels) based upon minimizing the total cost of hiring, firing, holding inventory, backorders, payroll, overtime, and undertime.

linear economy–Using resources to make products, while creating waste without any regard for the environment. Ant.: circular economy.

linear layout–A layout of machines in one straight line often according to the sequence they are required to manufacture a specific product or group of products. This type of layout makes it difficult to reallocate operations among workers and machinery. See: assembly line.

linear or I-shaped warehouse layout–A warehouse layout in which items flow linearly through the facility from receipt to storage to shipment in a pattern that resembles an assembly line. The receiving docks and shipping docks are located at opposite ends of the facility.

linear production–Producing according to a level schedule so that a plotting of actual output versus planned output forms a straight line even when plotted for a short segment of time.

linear programming–A mathematical procedure for solving linear optimization problems that seek to minimize or maximize a linear function subject to a set of linear constraints. Linear programming can be used in a variety of supply chain management applications including production planning, workforce scheduling, inventory management, and logistics network design. See: objective function.

linear regression–A statistical data technique that estimates a dependent variable as a linear function of one or more independent variables. Linear regression can be used to develop forecasting models.

linear trend forecasting–Estimating general upward or downward patterns into the future using linear regression or time-series forecasting methods.

linearity–1) Production at a constant quantity. 2) Use of resources at a level rate, typically measured daily or more frequently.

link–The transportation method used in a logistics system to connect the nodes of the system.

liquid waste generated–One of the five green SCOR metrics. This includes waste that is either disposed of or released to open water or sewer systems.

liquid zone–The time period beyond the slushy zone when any changes can be made to the master production schedule (MPS) as long as it is within the parameters of the production plan. See: frozen zone, planning time fence, slushy zone.

liquidation–The selling of assets in return for cash. The assets are usually sold into secondary markets where either the product or disassembled component assets may be resold. This can be a viable income stream for reverse supply chains. Syn.: salvage.

liquidator–A secondary market company that buys products that have reached the ends of their sales lives in the primary channel. Liquidators are often contracted to move returned goods that will not provide enough value if renewed or that are past their useful lives.

liquidity–The ability of a firm to pay debts as they come due using cash and assets that can be quickly converted to cash.

liquidity ratio–A financial ratio that indicates a firm's ability to meet short-term financial obligations. See: current ratio, quick ratio.

listening post–The translation of unstructured text into demand or supply signals. These are used as a form of sensing primarily for quality, warranty, demand, and customer satisfaction analysis.

Little's Law–When a system has fixed capacity and is relatively stable, the lead time and work in process (WIP) inventory level are proportional, and an increase or decrease in either WIP or lead time will produce a proportional change in the other. The formula for the law is WIP equals throughput rate multiplied by lead time.

live load–In trucking, the scenario where a driver waits while facility personnel either load or unload the trailer. Ant.: drop and hook trucking.

LMS–Acronym for learning management system.

load–1) The amount of planned work scheduled for and actual work released to a facility, work center, or operation for a specific span of time. This is usually expressed in terms of standard hours of work or, when items consume similar resources at the same rate, units of production. Syn.: workload. 2) The total cargo or contents of a shipping vehicle in weight, volume, or utilization percentage.

load center–Syn.: work center.

load leveling–Spreading orders out in time or rescheduling operations so that the amount of work to be completed in sequential time periods tends to be distributed evenly and is achievable. Syns.: capacity smoothing, level loading. See: heijunka, level schedule.

load profile–A display of future capacity requirements based on released and/or planned orders over a given span of time. Syn.: load projection. See: capacity requirements plan.

load projection–Syn.: load profile.

load-distance analysis–A method of designing a facility layout based on minimizing the product or material travel per time period.

loading port–The port where cargo is loaded onto an exporting vessel.

local area network (LAN)–A high-speed data communication system for linking computers and devices over a relatively small geographic area such as a building or campus.

local measurements–A set of measurements related to a specific resource, operation, process, or item, that may or may not correlate to global organization measurements. Examples include departmental efficiency, process yield, and days of supply (DOS). See: global measurements.

local rate–A rate pertaining to two points served by a single carrier.

location audit–A methodical verification of the location records for an item or group of items in inventory to ensure that when the record shows an item's location, it is actually in that location.

location grid–A layout of a warehouse used to improve inventory management and cycle counting.

location tag–A bar-coded sign situated at a warehouse location at which the location number can be read or scanned.

locational determinants–Information or factors considered in determining where to put a facility.

locator record–A record used in a stockroom (or any location in a facility) providing information about where each item is stored. See: locator system.

locator system–A system for maintaining a record of the storage locations of items in inventory. See: locator record.

LOE–Acronym for level of effort.

log book–A daily record of time and miles driven that is maintained by a truck driver. It is mandated by the U.S. Department of Transportation (DOT) and includes duty-related and non-duty-related activities. This can be managed manually or electronically. See: electronic logging device (ELD).

logical relationship–In project management, a dependency between two activities or between a milestone and an activity. The four possible relationships are (1) finish-to-start—activity A must be finished before activity B can start; (2) finish-to-finish—activity A must be finished before activity B can finish; (3) start-to-start—activity A must start before activity B can start; and (4) start-to-finish—activity A must start before activity B can finish.

logistics–The subset of supply chain management that controls the planning, coordinating and movement of resources, such as people, materials, inventory, and equipment, from one location to another. It includes the forward and reverse movement, handling, and storage of resources between two points.

logistics channel–A set of supply chain partners who participate in storage, transportation, and communications that contribute to the flow of goods.

logistics data interchange (LDI)–The exchange of logistics information electronically between partners in the supply chain to increase efficiency.

logistics management–The part of supply chain management that oversees the planning and execution of forward and reverse flows of goods and related information between points in the supply chain to meet customer requirements.

logistics service provider–An organization that provides one or many logistics services to customers.

logistics social responsibility–The subset of corporate social responsibility (CSR) that relates to logistics, including minimizing negative impacts, monitoring and controlling, reporting, and continuously improving in social responsibility areas that include the environment, health and safety, and labor issues related to warehousing, transportation, and other logistics areas.

logistics strategy–A plan for the logistics elements of a business—including warehousing, information systems, and transportation—that is aligned with the overall business strategy. See: strategic plan.

logistics system–The planning and coordination of the physical movement aspects of a firm's operations such that a flow of raw materials, parts, and finished goods is achieved in a manner that minimizes total costs for the levels of service desired.

lognormal distribution–A continuous probability distribution in which the natural logarithms of the random variable are normally distributed.

long haul–A long distance in terms of the transport of goods or passengers. The actual distance would be specific to the mode of transport. For example, in trucking, it refers to journeys too long to be made in one day.

long ton–Two thousand two hundred and forty (2,240) pounds.

longest-task-time (LTT) rule–A method for sequencing jobs at a workstation, beginning with the task that will require the longest time. See: dispatching rule.

long-term planning–Business planning that addresses the strategic needs of the organization. See: business plan, resource planning.

long-term production plan–Syn.: aggregate production plan.

loss leader pricing–Pricing some products below cost to attract customers to the store or website, in the expectation that they will buy other items as well.

loss to society–According to Genichi Taguchi, an occurrence when a product's characteristics do not meet the standards by which it was designed, such as performance measurements, customer tolerances, expected life, etc.

lost sale–A potential sale that was not completed, usually due to lack of availability of the item in question.

lot–A quantity of items produced together and sharing the same production costs and specifications. See: batch, lot control. Syn.: material lot.

lot control–Assigning a unique batch number to each lot or batch and tracking each batch through subsequent processes. Lot control is used to maintain lot integrity from raw materials from the supplier through manufacturing to consumers. See: blockchain, lot, lot traceability.

lot cost–In cost accounting, those costs associated with processing a common lot or quantity of parts having the same specifications.

lot number–A unique identification assigned to a homogeneous quantity of material from a manufacturer. Syns.: batch number, mix number.

lot operation cycle time–The length of time required from the start of setup, through production, to the end of cleanup for a production lot at a given operation.

lot size–The amount of a particular item that is ordered from a manufacturing facility or a supplier or is issued as a standard quantity to the production process. Syn.: order quantity.

lot sizing–The process of, or techniques used in, determining lot size. See: order policy.

lot splitting–Dividing a lot into two or more sublots and simultaneously processing each sublot at identical (or very similar) work centers as separate lots, usually to compress lead time or to expedite a small quantity. Syn.: operation splitting.

lot tolerance percent defective (LTPD)–Expressed in percent defective, the poorest quality in an individual lot that should be accepted. Note: The LTPD is used as a basis for some inspection systems and is commonly associated with a value for a small consumer risk.

lot traceability–The ability to identify and track the lot or batch number of a product from source to point of use using a unique lot number. In certain regulated industries, lot traceability may be a legislative requirement, such as in pharmaceuticals or the food industry. See: lot control.

lot-for-lot (L4L)–A lot-sizing technique that generates planned orders in quantities equal to the net requirements in each period. See: discrete order quantity.

lot-size code–Syn.: order policy code.

lot-size inventory–Inventory that results whenever quantity price discounts, shipping costs, setup costs, or similar considerations make it more economical to purchase or produce in larger lots than are needed for immediate purposes. See: cycle stock.

lot-size inventory management interpolation technique (LIMIT)–A technique for looking at the lot sizes for groups of similar products to determine the effect economic lot sizes will have on the total inventory, total setup costs, and machine availability.

low-cost-provider strategy–A strategy of offering the lowest prices in the market to gain share and increase sales volume in industries composed of numerous players offering the same type of products.

lower control limit (LCL)–Control limit for points below the central line in a control chart.

lower specification limit (LSL)–In statistical process control, charting the line that defines the minimum acceptable level of random output. See: tolerance limits.

low-level code–A number that identifies the lowest level in any bill of material (BOM) at which a particular component appears. Net requirements for a given component are not calculated until all the gross requirements have been calculated down to that level. Low-level codes are calculated and maintained automatically by the enterprise resource planning (ERP) application. Syn.: explosion level. See: level.

LPN–Acronym for license plate number.

LS–Acronym for late start date.

L-shaped warehouse layout–A warehouse layout in which the receiving area is located on one side of the building and the shipping area is on an adjacent side of the building. The goods generally flow through the facility from receiving to storage to picking and shipping in a path shaped like an L.

LSL–Acronym for lower specification limit.

LSS–Acronym for Lean Six Sigma.

LTL–Acronym for less-than-truckload.

LTPD–Acronym for lot tolerance percent defective.

LTM–Acronym for lead time managed.

LTT–Acronym for longest-task-time.

lumpy demand–A demand pattern that is characterized by demand quantities that vary greatly between successive time periods. See: discontinuous demand.

M

machine downtime–A period during which a machine is unavailable due to tool breakage, worker unavailability, machine breakdown, maintenance, teardown, setup, and other factors.

machine flexibility–In work-cell design, choosing between general-purpose machinery versus special-purpose machinery so that the lowest cost and most adaptability is achieved.

machine hours–The amount of time, in hours, that a machine is actually running. Machine hours, rather than labor hours, may be used for planning capacity for scheduling and for allocating costs.

machine learning (ML)–Artificial intelligence (AI) tools that allow machines to learn from experience and be capable of analysis, self-training, and observation to improve their performance.

machine loading–The accumulation by workstation, machine, or machine group of the hours generated from the scheduling of operations for released orders by time period. Machine loading differs from capacity requirements planning (CRP) in that it does not use the planned orders from material requirements planning (MRP) but operates solely from released orders.

machine productivity–A productivity measure that describes the rate of output of a machine per unit of time compared with an established standard or rate of output. Machine productivity can be expressed as output per unit of time or output per machine hour. See: labor productivity, productivity.

machine utilization–A measure of how effectively a machine is being used. Machine utilization compares the actual machine time (setup and run time) with available time.

machine-limited capacity–A production environment where a specific machine limits throughput of the process. See: constraint, throughput.

machining center–An automated computer-controlled machine that can be used to perform multiple processes and operations.

macro environment–The environment external to a business including technological, economic, natural, and regulatory forces that marketing efforts cannot control.

MAD–Acronym for mean absolute deviation.

maintainability–The characteristic of equipment design and installation that enables the equipment to be repaired easily and efficiently. See: serviceability.

maintenance, repair, and operating (MRO) supplies–Items used in support of general operations and maintenance such as maintenance supplies, spare parts, and consumables used in the manufacturing process and supporting operations. See: nonproduction material.

maintenance, repair, and overhaul (MRO)–All activities designed to ensure that an item or piece of equipment can continue to perform its required functions reliably. This often involves either repairing or remanufacturing the item to achieve the desired level of performance. MRO is prominent in the aviation industry, but it can also be applied in a general remanufacturing context.

major setup–The equipment setup and related activities required to manufacture a group of items in sequence, exclusive of the setup required for each item in the group. See: minor setup.

make–The process that describes the activities associated with the conversion of materials or creation of content for services. The process is characterized by adding value to products or services through activities such as assembly, mixing, separating, forming, machining, and chemical processes. The Make process has been renamed to Transform in the Supply Chain Operations Reference Digital Standard (SCOR DS). See: transform.

make or buy cost analysis–A comparison of all the costs associated with making an item versus the cost of buying the item. See: make-or-buy decision.

make-or-buy decision–The act of deciding whether to produce an item internally or buy it from an outside supplier. Factors to consider in the decision include costs, capacity availability, proprietary and/or specialized knowledge, quality considerations, skill requirements, volume, and timing. See: make or buy cost analysis.

make-to-order (MTO)–A production environment where a good or service is made after receipt of a customer's order. The final product is usually a combination of standard items and items custom-designed to meet the special needs of the customer. Where options or accessories are stocked before customer orders arrive, the term assemble-to-order (ATO) is frequently used. Syn.: build-to-order (BTO). See: assemble-to-order (ATO), make-to-stock (MTS).

make-to-stock (MTS)–A production environment where products can be and usually are finished before receipt of a customer order. Customer orders are typically filled from existing stocks, and production orders are used to replenish those stocks. Syn.: produce-to-stock. See: assemble-to-order (ATO), make-to-order (MTO).

Malcolm Baldrige National Quality Award (MBNQA)–An award established by Congress in 1987 to raise awareness of quality management and to recognize U.S. companies that have implemented successful quality management systems. Up to four awards may be given annually in each of three categories: manufacturing company, service company, and small business. The award is named after the late U.S. Secretary of Commerce, Malcolm Baldrige, a proponent of quality management. The U.S. Commerce Department's National Institute of Standards and Technology manages the award, and the American Society for Quality administers it. Syn.: Baldrige Award.

management by objectives (MBO)–A participative goal-setting process that enables the manager or supervisor to construct and communicate the goals of the department to each subordinate. At the same time, the subordinate is able to formulate personal goals and influence the department's goals.

management by walking around (MBWA)–The management technique of managers touring a facility on a regular basis to talk with workers and staff about problems, trends, and potential solutions.

management estimation–A judgmental forecasting technique whereby responsible individuals predict the demand for new products or alter a quantitative forecast for existing products largely on the basis of experience and intuition. Other judgmental forecasting techniques may be used in combination with management estimation to improve the accuracy of the estimate. See: Delphi method, historical analogy, panel consensus, pyramid forecasting.

management information system (MIS)–An integrated approach for storing and providing relevant data, reports, and tools to support managers in decision-making and managing the organization.

management science–Syn.: operations research.

managerial accounting–A branch of accounting that uses techniques such as break-even analysis, cost-volume-profit analysis, make-buy analysis, and others to provide information used in day-to-day decision-making.

man-hour–A unit of measure representing one person working for one hour.

manual processing–Doing any work related to material flow by hand or with simpler non-motorized equipment, such as moving items with pallet jacks.

manual rescheduling–The most common method of rescheduling open orders (scheduled receipts). Under this method, the material requirements planning (MRP) provides information about what needs to be rescheduled. Due dates and required order quantity changes are then analyzed and updated by material planners or other authorized persons. Syn.: planner intervention. Ant.: automatic rescheduling.

manufacturability–A measure of the design of a product or process in terms of its ability to be produced easily, consistently, and with high quality.

manufacturer's agent–Syn.: manufacturer's representative.

manufacturer's representative–An entity who sells goods for several firms but does not take title to them. Syn.: manufacturer's agent.

manufacturing–A series of interrelated activities and operations involving the design, material selection, planning, production, quality assurance, management, and marketing of discrete consumer and durable goods.

manufacturing authorization–Syn.: manufacturing order.

manufacturing calendar–A calendar used in inventory and production planning functions that consecutively numbers only the working days so that the component and work order scheduling may be done based on the actual number of workdays available. Syns.: M-day calendar, planning calendar, production calendar, shop calendar. See: resource calendar.

manufacturing capital asset value–The depreciated value of manufacturing fixed assets.

manufacturing cycle–Syn.: manufacturing lead time.

manufacturing cycle efficiency–The ratio of value-added time to manufacturing lead time or cycle time. Manufacturing cycle time can be improved by the reduction of manufacturing lead time by eliminating non-value-added activities such as inspecting, moving, and queuing.

manufacturing data sheet–A document prepared by the manufacturer of a product that summarizes the characteristics of a product, machine, software, or component. The data sheet assists purchasers in understanding the product, its role, and expected performance.

manufacturing direct–The practice of shipping products and goods directly from the manufacturing plant to the customer, bypassing consolidation activities in warehouses and distribution centers (DCs). See: drop shipping.

manufacturing engineering–The engineering discipline concerned with designing and improving production processes. See: process engineering.

manufacturing environment–The framework in which manufacturing strategy is developed and implemented. Elements of the manufacturing environment include external environmental forces; corporate strategy; business unit strategy; other functional strategies (marketing, engineering, finance, etc.); product selection; product/process design; product/process technology; and management competencies. The manufacturing environment description often refers to whether a company, plant, product, or service is make-to-stock (MTS), make-to-order (MTO), or assemble-to-order (ATO). Syn.: production environment. See: manufacturing strategy.

manufacturing execution system (MES)–A program or system used in shop floor control, including programmable logic controllers and process control computers, to improve the efficiency of production processes and allow companies to track the status of production orders. MES systems gather actual performance information, generate reports, present graphical displays, and provide alarms that inform operations personnel about production status.

manufacturing instruction–A set of detailed instructions for carrying out a manufacturing process, usually referenced by the routing.

manufacturing layout strategy–The design of a manufacturing facility to optimize product flow, reduce material handling, and utilize space. Examples of layout strategies include process, cellular, fixed-position, job shop, functional, and linear. See: manufacturing strategy.

manufacturing lead time–The total time required to manufacture an item, exclusive of lower-level purchasing lead time. For make-to-order (MTO) products, it is the length of time between the release of an order to the production process and shipment to the final customer. For make-to-stock (MTS) products, it is the length of time between the release of an order to the production process and receipt into inventory. Manufacturing lead time includes order preparation time, queue time, setup time, run time, move time, inspection time, and put-away time. Syns.: manufacturing cycle, production cycle, production lead time. See: lead time.

manufacturing order–A document, group of documents, or schedule conveying authority for the manufacture of specified parts or products in specified quantities. Syns.: job order, manufacturing authorization, production order, production release, run order, shop order, work order. See: assembly parts list, batch card, blend order, fabrication order, mix ticket, work order.

manufacturing order reporting–Syn.: production reporting.

manufacturing philosophy–The set of guiding principles, driving forces, and expected behaviors that helps communicate goals, plans, and policies to all employees and that is reinforced through conscious and subconscious behavior within the manufacturing organization. See: lean manufacturing, total quality management (TQM).

manufacturing planning and control (MPC) system–A closed-loop feedback system that includes the planning functions of production planning (sales and operations planning (S&OP)), master production scheduling, material requirements planning (MRP), and capacity requirements planning (CRP). Once the plan has been accepted as realistic, execution begins. The execution functions include input/output control (I/O control), detailed scheduling, dispatching, and supplier scheduling. A closed-loop MRP system is one example of a MPC system.

manufacturing process–The series of operations performed upon material to convert it from the raw material or a semifinished state to a state of further completion. Manufacturing processes can be arranged in a process layout, product layout, cellular layout, or fixed-position layout. Manufacturing processes can be planned to support make-to-stock (MTS), make-to-order (MTO), assemble-to-order (ATO), and so forth, based on the strategic use and placement of inventories. See: production process, transformation process.

manufacturing ramp-up–The final phase of new product and process development in which the new product moves from pilot production to full-scale manufacturing.

manufacturing release–The issuance of a manufacturing order into the production facility.

manufacturing representative–Syn.: manufacturer's representative.

manufacturing resource planning (MRP II)–A method for the effective planning of all internal resources of a manufacturing company. It is made up of a variety of processes, each linked together: business planning, production planning (sales and operations planning (S&OP)), master production scheduling, material requirements planning (MRP), capacity requirements planning (CRP), and the execution support systems for capacity and material. Output from these systems is integrated with financial reports such as the business plan, purchase commitment report, shipping budget, and inventory projections in dollars. MRP II is a direct outgrowth and extension of closed-loop MRP and is the predecessor to enterprise resource planning (ERP).

manufacturing strategy–A group of decisions around the formulation and deployment of manufacturing resources. To be most effective, the manufacturing strategy should act in support of the overall strategic direction of the business and provide for competitive advantages. See: capacity strategy, manufacturing environment, manufacturing layout strategy, manufacturing volume strategy, production cycle element, production planning and control strategy.

manufacturing volume strategy–An element of manufacturing strategy that includes a series of assumptions and predictions about long-term market, technology, and competitive behavior in the following areas: (1) the predicted growth and variability of demand; (2) the costs of building and operating different-sized plants; (3) the rate and direction of technological improvement; (4) the likely behavior of competitors; and (5) the anticipated impact of international competitors, markets, and sources of supply. See: manufacturing strategy.

many-to-many communication–Communication that enables many people to exchange information with many other people.

MAPE–Acronym for mean absolute percent error.

mapping software–Software applications that provide tools for creating dynamic, interactive maps and routes or mapping business processes. See: geographical information system (GIS).

margin–A ratio of an organization's operating profit to revenues, measuring management's ability to control operating expenses.

marginal analysis–The comparison of the incremental revenues versus incremental costs of a decision or activity to determine the optimal recommendation.

marginal cost–The incremental costs incurred when the level of output of some operation or process is increased by one unit.

marginal cost of capital–The cost of the next dollar, after taxes, that a firm expects to raise for investment.

marginal pricing–Pricing products at a markup over the marginal cost of producing the next item. Marginal costs generally include the variable cost of producing and selling an additional item.

marginal product–In economics, the additional quantity of total output following from a one-unit increase in variable input. See: law of diminishing marginal returns.

marginal revenue–The incremental sales dollars received when the level of output of some operation is increased by one unit.

marginal utility–The additional usefulness and enjoyment received from consuming one more unit of a good or service.

market–A set of buyers and sellers exchanging products. Prices tend to equalize through ongoing exchanges between buyers and sellers. Markets include institutional markets, government markets, industrial markets, and consumer markets. See: consumer market, government market, industrial market, institutional market.

market boundary–1) A physical or virtual constraint that defines a particular market, such as geography. 2) In transportation, the boundary where the delivery time or laid-down cost for two companies is equal.

market demand–The total demand that exists within a defined customer group in a given geographical area during a particular time period given a known marketing program or price point.

market dominance–The control or significant advantage of a company over its competitors in a particular market.

market equilibrium–The point in a market where the demand for a product and the supply of that product are exactly equal. If supply were greater, the price would fall. If demand were greater, the price would rise. Free markets tend to move toward their equilibrium point.

market penetration–The degree to which a product has been accepted by the marketplace. Syn.: market reach.

market reach–Syn.: market penetration.

market segment–A group of potential customers sharing some measurable characteristics based on demographics, psychographics, lifestyle, geography, benefits, and so forth.

market segmentation–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.

market share–The actual portion of current market demand that a company or product achieves.

market strategy–The marketing plan to support the business strategy.

market survey–A questionnaire designed to get feedback from potential customers about demand for a product or service.

market targeting–The process of developing measurements of the desirability of given market segments and deciding in which market segments to compete.

market value-added (MVA)–The difference between the market value of a firm's equity and the capital that has been invested in the firm, which represents the total wealth the firm has created since its inception.

market-driven–Products or activities that are a result of demand from the public or customers.

market-driven demand management–The process of using market signals, including sensing market conditions based on demand signals, and then shaping demand using tools like price optimization; trade promotion planning; new product launch plan alignment; and social, digital, and mobile applications.

marketing–The design, pricing, and promotion of goods and services to drive interest among businesses and consumers and satisfy and retain customers..

marketing channel–A set of organizations through which a good or service passes as it goes from a raw state to the final consumer. See: distribution channel.

marketing cost analysis–The study and evaluation of the relative profitability or costs of different marketing operations in terms of customers, marketing units, commodities, territories, or marketing activities.

marketing management–See: demand management.

marketing mix–The concept that marketing strategy determines product, price, promotion, and channel targets in selected markets.

marketing research–The systematic gathering, recording, and analyzing of data relating to the marketing of goods and services. Such research may be undertaken by impartial agencies or by business firms or their agents. Marketing research includes several types: (1) Market analysis is the study of the size, location, nature, and characteristics of markets; (2) sales analysis (or research) is the systematic study and comparison of sales data; and (3) consumer research is concerned with the discovery and analysis of consumer attitudes, reactions, and preferences.

marketing strategy–The plan the marketing function expects to use to achieve its business and marketing objectives in a particular market. The strategy includes marketing expenditures, marketing mix, and marketing allocation.

market-positioned strategy–A location strategy that focuses on the customer by placing warehouses closer to the customer. See: product-positioned strategy.

market-positioned warehouse–A warehouse or distribution center (DC) located near target markets to fulfill customer orders with reduced lead times and minimized transportation costs.

marks and numbers–Identifying codes or symbols placed on products or containers used to identify a shipment or its parts.

mass customization–The use of mass production techniques to create large volume of products in a wide variety. This strategy keeps production costs low while enabling customized output primarily by utilizing postponement or delayed differentiation.

mass marketing–The strategy of sending the same message to all potential customers.

mass production–High-quantity production characterized by specialization of equipment and labor. See: continuous production.

master black belt–In six sigma, a quality expert capable of implementing strategic quality efforts as well as teaching other facilitators (black belts) the quality applications within all levels of the organization.

master budget–The document that consolidates all other budgets of an organization into an overall plan, including the projection of a cash flow statement, an operating statement for the budget period, and a balance sheet for the end of the budget period. Syn.: static budget.

master contract–1) A contract that lays out the general provisions of a long-term agreement and governs most of the details of future individual contracts or purchase orders for a period of time. 2) In relation to unionized labor, the contract between the labor union and the employer. Syn.: master service agreement.

master data–An enterprise's essential core data consisting of basic information needed across the enterprise to conduct business. Master data describes the core entities of the enterprise, including products, customers, suppliers, locations, and charts of accounts.

master data management (MDM)–An area or discipline that is responsible for managing the enterprise's master data, in order to ensure the uniformity, accuracy, completeness, relevance, integrity, and accountability of the data.

master pack–A large, protective box used to contain smaller boxes. This reduces material handling activities and protects the smaller packages.

master planning–A group of business processes that includes the following activities: demand management (forecasting and order servicing), production and resource planning, and master scheduling (master schedule and the rough-cut capacity plan).

master production schedule (MPS)–A line on the master schedule grid that reflects the anticipated build schedule for those items assigned to the master scheduler. The master scheduler maintains this schedule, and in turn, it becomes a set of planning numbers that drives material requirements planning (MRP). It represents what the company plans to produce, expressed in specific configurations, quantities, and dates. The MPS is not a sales item forecast that represents a statement of demand. It must take into account the forecast, the production plan, and other important considerations such as backlog, availability of material, availability of capacity, and management policies and goals. See: master schedule.

master schedule–A format that includes time periods (dates), the forecast, customer orders, projected available balance, available-to-promise (ATP), and the master production schedule (MPS). It takes into account the forecast; the production plan; and other important considerations such as backlog, availability of material, availability of capacity, and management policies and goals. See: master production schedule (MPS).

master schedule item–A part number selected to be planned by the master scheduler. The item is deemed critical in its impact on lower-level components or resources such as skilled labor, key machines, or dollars. Therefore, the master scheduler, not the computer, maintains the plan for these items. A master schedule item may be an end-item, a component, a pseudo number, or a planning bill of material (BOM).

master scheduler–Often the job title of the person charged with the responsibility of managing, establishing, reviewing, and maintaining a master schedule for select items. Ideally, the person should have substantial product, plant, process, and market knowledge because the consequences of this individual's actions often have a great impact on customer service, material, and capacity planning. See: master production schedule (MPS).

master scheduling–The process in which the master schedule is generated and reviewed and adjustments are made to the master production schedule (MPS) to ensure consistency with the production plan. The MPS (the line on the grid) is the primary input to the material requirements plan. The sum of the MPSs for the items within the product family must equal the production plan for that family.

master service agreement–Syn.: master contract.

match capacity strategy–A capacity strategy that strikes a balance between the lead and lag capacity strategies by adding capacity at approximately the rate of actual demand increase.

material analyst–The person assigned responsibility for the planning and management of inventory levels of specific items. They may also be responsible for the ordering or sourcing of those times. Syn.: material planner.

material class–A grouping of materials with similar characteristics for planning and scheduling purposes.

material constraint–The inability to fulfill an order due to the shortage of material.

material control–Syn.: inventory control.

material definition–A definition of the properties and characteristics of a substance.

material flexibility–The ability of the transformation process to handle unexpected variations in material inputs.

material flow–The movement, protection, storage, and control of materials and products throughout manufacturing, assembly, warehousing, and distribution. These include the movement of materials from unloading to stocking to loading to shipping in a warehouse or a facility. See: process chart, process flow, flow process chart.

material handling equipment–Equipment used in production or warehousing and distribution centers (DCs) to move, store, control, and protect materials and goods during manufacturing, distribution, consumption, and disposal. See: materials handling, materials handling system, flexible path equipment, industrial truck.

material index–The total of raw material weights divided by final product weight.

material list–Syn.: picking list.

material lot–Syn.: lot.

material planner–The person normally responsible for managing the inventory levels, schedules, and availability of selected items, either manufactured or purchased. They use material requirements planning (MRP)in order to review the balance of supply and demand and act on exception messages. Syns.: inventory planner, material analyst, parts planner, planner.

material planning–Syn.: inventory planning.

material receipt inspection–The process of the receiving department comparing the incoming material to the purchase order to verify that the correct material and quantity have been received. The material is then inspected for quality and general condition. A material receipt report is prepared, and copies are distributed to the appropriate departments, such as purchasing and accounting.

material release–The issuing of parts into the production process.

material requirements plan–The output from the process of material requirements planning (MRP).

material requirements planning (MRP)–A set of techniques that uses bill of material (BOM) data, inventory data, and the master production schedule (MPS) to calculate requirements for materials. It makes recommendations to release replenishment orders for material. Further, because it is time phased, it makes recommendations to reschedule open orders when due dates and need dates are not in phase.
Time-phased MRP begins with the items listed on the MPS and determines (1) the quantity of all components and materials required to fabricate those items and (2) the date that the components and material are required. Time-phased MRP is accomplished by exploding the BOM, adjusting for inventory quantities on hand or on order, and offsetting the net requirements by the appropriate lead times.

material requisition–An authorization initiated by a user that identifies the items and quantities to be withdrawn from inventory or included in a purchase order. Syns.: materials requisition, production materials requisition.

material review board (MRB)–An organization within a company, often a standing committee, that determines the resolution or disposition of items that have questionable quality or other attributes.

material safety data sheet (MSDS)–Syn.: safety data sheet (SDS).

material specification–An explanation of the characteristics of the material to be produced or purchased.

material sublot–A uniquely identifiable subset of a material lot containing quantity and location. A sublot may be a single item.

material usage variance–The difference between the planned or standard requirements for materials to produce a given item and the actual quantity used for a particular instance of manufacture.

material yield–Syn.: yield.

material-dominated scheduling (MDS)–A technique that schedules materials before processors (equipment or capacity) to facilitate the efficient use of materials. MDS can be used to schedule each stage in a process flow scheduling system. Material requirements planning (MRP) systems use MDS logic. See: processor-dominated scheduling.

materials–The components that are processed by an operation.

materials efficiency–A concept that addresses the efficiency with which materials are obtained, converted, and shipped in the overall purchasing, production, and distribution process. It can be considered as a companion concept to labor efficiency, and it becomes potentially more significant as the materials portion of cost of goods sold (COGS) continues to grow.

materials handler–An employee who is responsible for moving boxes, packages, and items around a facility or warehouse for storage and staging for shipment or use in production.

materials handling–The movement and storage of goods inside a production or distribution facility. This represents a capital cost and is balanced against the operating costs of the facility.

materials handling system–The equipment and technology that receive, move, store, and deliver items to different locations within a production or distribution facility.

materials handling time–The time necessary to move materials from one work center to the next work center. It includes waiting for the material handling equipment and actual movement time.

materials management–The grouping of management functions supporting the complete cycle of material flow, from the purchase and internal control of production materials to the planning and control of work in process (WIP) to the warehousing, shipping, and distribution of the finished product.

materials requisition–Syn.: material requisition.

matériel–A term, used more frequently in nonmanufacturing organizations, to refer to the equipment, apparatuses, and supplies used by an organization.

mathematical programming–The general problem of optimizing an objective function of several variables subject to a number of constraints. A linear program is a type of mathematical program in which the objective function and constraints are linear in the variables.

matrix–A mathematical array having one, two, and sometimes more dimensions into which collections of data may be stored and processed.

matrix bill of material (BOM)–A chart based on the bills of material (BOMs) for a number of products in the same or similar families. It is arranged in a matrix with components in columns and parents in rows (or vice versa) to conveniently summarize the requirements for common components.

matrix diagram–A graphical technique used to analyze the relationship between two related groups of ideas. See: seven new tools of quality (N7).

matrix organizational structure–An organizational structure in which two (or more) channels of command, budget responsibility, and performance measurement exist simultaneously. For example, both product and functional forms of organization could be implemented simultaneously—that is, the product and functional managers have equal authority, and employees report to both managers.

maverick spending–The purchase of materials or supplies from off-contract suppliers, bypassing established purchasing procedures.

maximum allowable cost–In service organizations, the limit of reimbursement allowed by an agency for the cost of a supply item.

maximum demonstrated capacity–The highest amount of actual output produced in the past when all efforts have been made to optimize the resource (e.g. overtime, additional personnel, extra hours, extra shifts, reassignment of personnel, or use of any related equipment). This is the most output that the process could be expected to produce in a short period of time but represents a rate that cannot be maintained over a long period of time. See: demonstrated capacity.

maximum inventory–The planned maximum allowable inventory for an item based on its planned lot size and target safety stock.

maximum order quantity–An order quantity modifier, applied after the lot size has been calculated, that limits the order quantity to a pre-established maximum.

MBNQA–Acronym for the Malcolm Baldrige National Quality Award.

MBO–Acronym for management by objectives.

MBWA–Acronym for management by walking around.

M-day calendar–Syn.: manufacturing calendar.

M-days–Available manufacturing days, excluding holidays and weekends.

MDM–Acronym for master data management.

MDS–Acronym for material-dominated scheduling.

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

mean absolute deviation (MAD)–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.

mean absolute percent error (MAPE)–A relative measure of statistical variation in a forecast, which compares the absolute forecast errors to the actual demand in each time period. It is computed by dividing each absolute forecast error by the actual demand, multiplying that by 100 to get the absolute percentage error, and then computing the average of the percentages. See: absolute error.

mean squared error (MSE)–A measure of statistical variation in a forecast. It is computed by squaring the forecast errors and then taking the average of the squared errors.

mean time between failures (MTBF)–The predicted elapsed time between inherent failures of a mechanical or electronic system during normal system operation. MTBF is calculated by dividing the total operational time by the number of failures that occur during that time. This metric must meet design, legal, quality, and customer requirements.

mean time to failure (MTTF)–Average time for failure of a nonrepairable product (expected life) or average time to first failure of a repairable product. See: reliability.

mean time to repair (MTTR)–The average time that it takes to repair a product. MTTR is computed by dividing the total repair time by the number of repairs conducted during that time.

measure of service–Syn.: service level.

measure phase–A phase in the six sigma define, measure, analyze, improve, control (DMAIC) process during which current performance is evaluated.

measurement ton–A measurement equivalent to 40 cubic feet. It is a factor in water transportation rate-setting.

MEAT criterion–A practice of supplier selection in which the procurement function awards the contract to the most economically advantageous tender (MEAT) by considering criteria that reflect qualitative, technical, and sustainable aspects of the bid in addition to price.

median–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.

mediation–The introduction of a neutral third party who attempts to provide alternatives to issues causing conflict that have not been put forth by either party or to change the way the parties perceive the situation. It is often used in collective bargaining to reach an agreement.

MEIO–Acronym for multi-echelon inventory optimization.

mental model–A paradigm of how the world works formed by a person's experiences and assumptions.

merchandising–The practices used by organizations to promote and sell products to customers. Examples include packaging design and visual displays.

merchant–A buyer who purchases items for the purpose of reselling them.

Mercosur–A trading bloc of South American countries. This is also known as the Southern Common Market.

merge in transit–The consolidation of shipments from several different suppliers while they are en route into a single combined load for delivery to the customer.

merger–The acquisition of the assets and liabilities of one company by another.

MES–Acronym for manufacturing execution system.

metadata–Structured reference data that describes the content found in other data in an effort to make finding, using, and working with specific information within that data easier.

metered issues–Issues of parts or materials from stores in quantities that correspond to the rate at which materials are used.

methods analysis–That part of methods engineering normally involving an examination and analysis of an operation or a work cycle broken down into its constituent parts to improve the operation, eliminate unnecessary steps, and/or establish and record in detail a proposed method of performance.

methods study–An analysis conducted to improve the efficiency of work by studying the existing method to identify and eliminate wasted motion. See: therbligs.

methods-time measurement (MTM)–1) A system of predetermined motion-time standards. 2) A procedure that analyzes and classifies the movements of any operation into certain human motions and assigns to each motion a predetermined time standard selected by the nature of the motion and the conditions under which it will be made.

metric–A standard of measurement used to monitor performance.

microfactory–Small factories that often take advantage of highly automated technologies. They require less space, utilize a smaller labor force, and use less energy and materials compared with traditional factories.

micro-land bridge–An intermodal transportation solution that moves goods from a foreign country to a U.S. port over water and then across a portion of the U.S. using rail, with the final destination being an interior non-port city. See: land bridge, mini-land bridge.

micro-purchase–A practice to procure supplies and services below the standard purchase threshold using a simplified acquisition procedure. These purchases usually follow a procurement policy of a spend threshold where the spend is below the threshold buyers are allowed to undertake. Purchases within the threshold can be awarded without soliciting competitive price quotations if the price is reasonable.

middleware–Software that enables communication and connectivity between different applications or databases in a distributed system. This software interfaces systems together that were not designed to interact, providing users within different supply chain partners with seamless access to data and decision-support tools.

milestone–In project management, an important event in a project, usually the realization of a significant deliverable.

milestone chart–Syn.: Gantt chart.

milestone schedule–In project management, a high-level schedule displaying important deliverables.

military standards–Product standards and specifications for military or defense contractors, units, suppliers, and so forth. These standards sometimes become de facto standards within the civilian community.

milk run–A regular route for pickup of mixed loads from several suppliers. For example, instead of each of five suppliers sending a truckload per week to meet the weekly needs of the customer, one truck visits each of the suppliers on a daily basis before delivering to the customer's plant. Five truckloads per week are still shipped, but each truckload contains the daily requirement from each supplier. See: freight consolidation.

mini-land bridge–An intermodal transportation solution that moves goods from a foreign country to a U.S. port over water and then across the U.S. using rail, with the final destination being on the opposite coast. See: land bridge, micro-land bridge.

minimum cost order quantity–Syn.: economic order quantity (EOQ).

minimum inventory–The planned lowest amount or level of inventory for an item.

minimum order quantity (MOQ)–An order quantity modifier, applied after the lot size has been calculated, that increases the order quantity to a pre-established minimum.

minimum weight–In transportation, the smallest shipment volume that qualifies for a rate discount.

min-max system–An order point replenishment system in which the minimum (min) is the order point, and the maximum (max) is the order up to inventory level. The order quantity is variable and is the difference between the max and the sum of available and on-order inventory. An order is recommended when the sum of the available and on-order inventory is at or below the min. See: fixed order interval inventory model, fixed order period system, fixed order quantity (FOQ).

minor setup–The incremental setup activities required when changing over equipment from producing one item to another within the same group of items. See: major setup.

MIS–Acronym for management information system.

mission–The overall goal(s) for an organization set within the parameters of the business scope.

mission statement–The company statement of purpose.

mistake-proofing–Syns.: failsafe technique, failsafe work method, poka-yoke.

mitigation cost–The sum of the costs associated with managing non-systemic risks that arise from special-cause variations within the supply chain. These variations are not predictable, have assignable causes, have patterns of occurrences that are not inherent to the system's behavior, and are a diagnostic metric for total supply chain management cost.

mix control–The control of the individual varieties of items as they are processed through a production facility.

mix flexibility–The ability to handle a wide range of products or variants by using equipment that has short setup times.

mix number–Syn.: lot number.

mix ticket–A list of all the raw materials, ingredients, components, etc., that are required to perform a mixing, blending, or similar operation. This term is often used in batch processes or in the chemical industry. See: assembly parts list, batch card, blend formula, manufacturing order.

mixed load–A load having both regulated and exempt items in the same vehicle.

mixed manufacturing–1) The use of more than one manufacturing environment, such as make-to-stock (MTS) and configure-to-order (CTO), in the same facility. 2) The blend of traditional manufacturing processes such as machining and injection molding with advanced methods such as additive manufacturing.

mixed production strategy–Syn.: hybrid production method. See: chase production method, level production method.

mixed-flow scheduling–A procedure used in some process industries for building process train schedules that start at an initial stage and work toward the terminal process stages. This procedure is effective for scheduling when several bottleneck stages may exist. Detailed scheduling is done at each bottleneck stage.

mixed-mode or reverse-material issue–In SCOR DS, the practice of checking the amount of leftover raw material after each item is produced and returning the leftover raw material to inventory to maintain an accurate raw material inventory count. This practice is most useful in production environments in which the required amount of raw materials tends to vary between units. See: backflush.

mixed-model production–A lean practice consisting of the production of several different models or varieties of a product in small batches on the same production line without changeovers. See: heijunka, mixed-model scheduling.

mixed-model scheduling–A lean practice that develops production schedules supporting mixed-model production in which every model of every product is manufactured each day at a rate that matches its daily demand, reducing inventories and minimizing overproduction. See: heijunka, mixed-model production, right size frequency of production wheel.

ML–Acronym for machine learning.

mobile distribution center–A mobile facility, such as a storage tanker or mobile warehouse, that can quickly be installed and positioned close to the customer base to improve responsiveness and customer satisfaction.

modal optimization–The practice of balancing the trade-offs between logistics cost reduction and increased capital costs. Factors for identifying the dimensional size to minimize transportation costs include shipment lot size, per-shipment setup costs, consumption of and demand for raw materials, and storage capacity.

modal split–The statistical breakdown of use of various modes of transportation using measures such as passenger-miles, ton-miles, and revenue.

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

mode of transportation–A method of moving items between different geographic locations. Modes include road, rail, air, water (ocean or inland waterway), pipeline, intermodal, and courier or parcel services.

model–A representation of a process or system that attempts to relate the most important variables to generate insights into its likely performance. Frequently, the model is used to anticipate the outcome of a particular strategy if it were to be applied to the real process or system.

model number–An item number for a finished good. This number may include reference to other parts, such as a user's manual. See: universal product code (UPC).

modification flexibility–The capability of the transformation process to quickly implement minor product design changes.

modular architecture–A type of product architecture in which functions are assigned to specific parts and modules that can be replaced and interchanged without affecting the rest of the product functions. Modular architecture generally enables cost savings through economies of scale, faster product development cycles, and increased product variety due to the interchangeable modules. Ant.: integral architecture.

modular bill of material (BOM)–A type of planning bill that is arranged in product modules or options. It is often used in companies where the product has many optional features (e.g., assemble-to-order (ATO) companies, such as automobile manufacturers). See: dynamic bill of material (BOM), pseudo bill of material (BOM).

modular design strategy–The strategy of planning and designing products so that components or subassemblies can be used in current and future products or assembled to produce multiple configurations of a product. Automobiles and personal computers are examples of modular designs.

modular system–A system architecture design in which related tasks are grouped in self-contained packages. Each package, or module, of tasks performs all of the activities related to a specific function. Advances in functions can be implemented without affecting other packages or modules because of the loose coupling with other modules. See: client/server system, multitiered architecture, open system architecture.

modularization–In product development, the use of standardized parts for flexibility and variety. This permits product development cost reductions by using the same item(s) to build a variety of finished goods. Modularization is the first step in developing a planning bill of material (BOM).

module–A self-contained unit of a computer application that communicates with other parts of the system solely through inputs and outputs.

mold–A tool that shapes plastic or other soft material parts.

monopolistic competition–A market in which many competitors offer partially differentiated products or services within a given geographical area. Most competitors focus on market segments where they can meet customers' needs somewhat better than their competitors. See: industry structure type.

monopoly–A market that is solely controlled by a single company.

Monte Carlo simulation–A model used to predict the likelihood of certain outcomes from complex systems based on a sampling of one or more random variables. This model can be used to analyze the predicted performance of systems that would otherwise be intractable using stochastic analysis.

MOQ–Acronym for minimum order quantity.

motion study–An examination of the movements used to perform an activity to identify unnecessary actions and improve productivity. See: therbligs.

motor carrier–Motor vehicles that transport goods using the road network.

move–The physical transportation of inventory from one location to another within a facility. Movements are usually made under the direction and control of the inventory system.

move card–A card or other signal indicating that a specific number of units of an item are required and authorized to be moved from a source to a point of use. Syn.: move signal. See: kanban.

move order–The authorization to move a particular item from one location to another.

move signal–Syn.: move card.

move ticket–A document used in dispatching to authorize or record movement of a job from one work center to another. It may also be used to report other information, such as the actual quantity or the material storage location.

move time–The time that a job spends in transit from one operation to another in the plant.

movement inventory–A type of in-process inventory that arises because of the time required to move goods from one place to another.

moving average forecast–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.

MPC–Acronym for manufacturing planning and control.

MPS–Acronym for master production schedule.

MRB–Acronym for material review board.

MRO–1) Acronym for maintenance, repair, and operating. 2) Sometimes used as an acronym for maintenance, repair, and overhaul.

MRP–Acronym for material requirements planning.

MRP II–Acronym for manufacturing resource planning.

MRP nervousness–See: nervousness.

MSDS–Acronym for material safety data sheet.

MSE–Acronym for mean squared error.

MTBF–Acronym for mean time between failures.

MTFF–Acronym for mean time for failures.

MTM–Acronym for methods-time measurement.

MTTR–Acronym for mean time to repair.

muda–In lean manufacturing, work that does not create value for the customer and therefore is considered waste. Total costs are reduced by reducing waste within a system. There are seven categories of waste: (1) overproduction—excess or too early, (2) waiting—queuing delays, (3) transportation—unneeded movements, (4) processing—poor process design, (5) motion—activities that do not add value, (6) inventory—stock that is sitting and is accumulating cost without necessarily providing value, (7) defective units—scrap or rework.

multicountry strategy–A strategy in which each country market is self-contained. Customers have unique product expectations that are addressed by local production capabilities. Syn.: multidomestic strategy.

multicriteria decision model–A model that enables decision-makers to evaluate various alternatives across several decision criteria.

multicurrency–Having the capability to handle orders using monies from several countries for billing purposes.

multidomestic strategy–Syn.: multicountry strategy.

multi-echelon inventory optimization (MEIO)–The integrated management of inventory levels across the entire supply chain. See: single-echelon inventory optimization.

multi-enterprise business network (MEBN)–A commerce network or platform that facilitates the exchange of information or transactions among disparate parties within the scope of supply chain processes, including finance and settlement. An MEBN in conjunction with multi-enterprise business applications is sometimes referred to as a multi-enterprise supply chain business network (MESCBN).

multifactor productivity–A measure of productivity of two or more inputs, such as labor, capital costs, energy, and materials. See: single-factor productivity.

multilevel bill of material (BOM)–A display of all the components directly or indirectly used in a parent, together with the quantity required of each component. If a component is a subassembly, blend, intermediate, etc., all its components and all their components also will be exhibited, down to purchased parts and raw materials. See: indented bill of material (BOM).

multilevel master schedule–A master scheduling technique that allows any level in an end-item's bill of material (BOM) to be master scheduled. To accomplish this, master production schedule (MPS) items must receive requirements from independent and dependent demand sources. See: two-level master schedule.

multilevel where-used–A display for a component listing all the parents in which that component is directly used and the next higher-level parents into which each of those parents is used, until ultimately all top-level (level 0) parents are listed.

multilinear regression analysis–Syn.: multiple regression model.

multimodal solutions–Transportation plans that involve multiple means of transportation and coordinate the physical and information requirements. See: container on a flatcar (COFC), intermodal transport, trailer on a flatcar (TOFC).

multinational corporation–A company with capital investments in more than a single country.

multinational strategy–A strategy to out-compete rivals that focuses on opportunities to achieve cross-business and cross-country coordination, thereby enabling economies of scope and an improved competitive position with regard to reducing costs, cross-country subsidization, and so on. See: global strategy.

multiple activity chart–A chart that shows how workers or machines perform different activities within a process, measured on a common time scale. The chart is mainly used to identify opportunities to reduce idle time and increase utilization.

multiple regression model–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.

multiple sourcing–Syn.: multisourcing. See: dual sourcing.

multiple-channel queuing system–A waiting line system that has multiple parallel queues and service stations that can perform the same operations simultaneously.

multiple-item lot-sizing model–A process or system used to determine the total replenishment order quantity for a group of related items. See: joint replenishment.

multiple-phase queuing system–A queuing system that performs a service in two or more sequential steps, each with their own waiting lines. See: channel, queuing theory.

multiprocessing–The simultaneous use of two or more central processing units (CPUs), with each executing its own instruction set and each controlled by a single operating system.

multiskilled–The description of an individual who is capable of carrying out a variety of tasks.

multisourcing–Procurement of a good or service from more than one independent supplier. Syn.: multiple sourcing. Ant.: single sourcing. See: dual sourcing.

multitiered architecture–A system architecture design in which application business rules are separated from the data management rules in different layers or tiers to enhance modularity and scalability. See: modular system.

multitiered supplier audit–The practice of the buying organization officially inspecting its extended supply tiers itself or by utilizing an independent third party to ensure compliance with requirements and standards. Buyers can use questionnaires or visit suppliers onsite to gather information about the suppliers' attitudes and practices. The audits are investigative in nature because buying organizations seek to find evidence regarding violations of human rights or other corporate social responsibility (CSR) issues. See: UN Global Compact Management Model.

multivariate control chart–A control chart for evaluating the stability of a process in terms of the levels of two or more variables or characteristics.

mura–A Japanese word meaning unevenness or variability.

muri–A Japanese word meaning strain or overburden.

mutually exclusive project–In capital budgeting, a project that will not be accepted if a competing project is accepted. See: contingent project, independent project.

MVA–Acronym for market value-add.

mystery shopper–A person posing as a customer but who is really studying an organization's service quality to provide feedback to the organization for improvement purposes.

N

n–Sample size, i.e., the number of units in a sample.

N7–Acronym for seven new tools of quality.

NAC–Acronym for network access control.

NAFTA–Acronym for North American Free Trade Agreement.

National Environmental Policy Act (NEPA)–An act in the United States that requires federal agencies to consider the environmental impact of all plans before they can be implemented.

National Institute for Occupational Safety and Health (NIOSH)–A branch of the U.S. Centers for Disease Control and Prevention that conducts research and makes recommendations for the prevention of work-related injuries and illness.

National Labor Relations Board (NLRB)–In the United States, the federal agency that regulates labor law.

national stock number (NSN)–A unique 13-digit identification number assigned to every item that is repeatedly purchased, stored, and used by the U.S. government and other North Atlantic Treaty Organization (NATO) countries.

nationalization–Public ownership and operation of a business enterprise.

natural language processing (NLP)–A type of artificial intelligence (AI) focused on understanding, interpreting, and generating human language by computers.

natural variation–The inherent variability and randomness within a process, operation, or system that cannot be attributed to an assignable cause. See: common cause variability.

NC–Acronym for numerical control.

near-critical activity–In project management, a project activity with a low slack or float value.

need date–The date when an item is required for its intended use. In a material requirements planning (MRP) system, this date is calculated by a bill-of-material (BOM) explosion of a schedule and the netting of available inventory against that requirement.

negative float–In project management, the amount of time that must be made up on an activity to get the project back on schedule. See: float.

negotiation–The process by which a buyer and a supplier agree upon the conditions surrounding the purchase of an item or a service.

negotiation planning–The practice of thoroughly preparing for negotiation with suppliers in advance, including researching, clarifying the objectives, understanding potential concessions, and having a best alternative to a negotiated agreement.

nemawashi–A Japanese word referring to an informal business process of building consensus and laying the foundation within a group to elicit agreement on a proposed change, process, or strategy before formally announcing it.

nervousness–In a material requirements planning (MRP) system, a state in which minor changes in higher-level (e.g., level 0 or 1) records or the master production schedule (MPS) cause significant timing or quantity changes in lower-level (e.g., level 5 or 6) schedules and orders. Syn.: system nervousness. See: firm planned order (FPO).

nesting–The act of combining several small processes to form one larger process.

net assets–The difference between an organization's total assets and total liabilities. See: owner's equity.

net change MRP–An approach in which the material requirements plan is continually retained in the system. Whenever a change is needed in requirements, open order inventory status, or bill of material (BOM), a partial explosion and netting are made for only those parts affected by the change. Ant.: regeneration MRP.

net income (loss)–The final figure in the income statement representing the difference between an organization's total revenue and expenses over a specified period of time. If the difference is positive, it represents net income; if the difference is negative, it represents net loss. Syn.: net profit. See: income statement.

net inventory–Syn.: available inventory.

net operating cash flow–The difference between an organization's cash inflows and outflows over a specified time period. Net operating cash flow often is calculated as net operating profit after taxes plus depreciation and amortization, minus net increases in working capital requirements. This represents the organization's ability to generate cash flows from its operations to offset its operating expenses.

net operating income–The operating income before interest and taxes are subtracted. Syn.: earnings before interest and taxes (EBIT).

net operating profit after taxes (NOPAT)–Operating profit less applicable taxes.

net present value (NPV)–A metric used to determine the profitability of an investment by comparing the present value of expected cash flowing in (revenue) with that of cash flowing out (expenses) for a certain time period. See: capital budgeting, discounted cash flow, time value of money.

net profit–1) Syn.: net income (loss). 2) In throughput accounting, the difference between throughput and operating expense.

net requirement–In material requirements planning (MRP), the net requirements for a part or an assembly are derived as a result of applying gross requirements and allocations against inventory on hand, scheduled receipts, and safety stock. After being adjusted for lot size and offset for lead time, net requirements become planned orders.

net sales–Sales dollars the company receives, calculated by gross sales minus returns and allowances. See: gross sales.

net weight–The weight of an item exclusive of the weights of all packing materials and containers.

net working capital–The current assets of a firm minus its current liabilities. Syn.: working capital.

netting–The process of calculating net requirements.

network–1) The interconnection of computers, terminals, and communications channels to facilitate file and peripheral device sharing as well as effective data communication. 2) A graph consisting of nodes connected by arcs.

network access control (NAC)–The restriction of unauthorized users and devices from gaining access to a corporate or private network. It is sometimes referred to as network admission control.

network analysis–In project management, the calculation of early and late start and finish times for those activities not yet completed. See: critical path method (CPM), graphical evaluation and review technique (GERT), program evaluation and review technique (PERT).

network chain–A collaborative horizontal network connecting multiple organizations that facilitates the flow of information and goods in both directions across the supply chain.

network design–1) In supply chain management, the design of a supply chain's sourcing, manufacturing, and, distribution facilities and information flows to meet the organization's strategic goals. These strategic goals can include being efficient, responsive, customer-focused, or some other mix of priorities. The design includes determining the best locations, numbers, sizes, capacities, capabilities, and ownership models of facilities to support these goals. See: network optimization. 2) In logistics, the design and periodic review of inbound and outbound transportation networks and for the optimum mix of inventory levels per location to meet the organization's strategic goals. Considerations are made to balance tradeoffs among warehouse costs, transportation times and expenses, and customer service goals.

network diagram–A graphical tool that shows the dependencies between activities in a project (i.e., which activities precede other activities and which can be done in parallel). See: activity-on-arrow network (AOA), activity-on-node network (AON), network path.

network logic–Activity dependencies that make up a project schedule network diagram.

network loop–A network path that crosses the same activity or node twice. A network loop cannot be analyzed by the critical path method, critical chain, or other traditional network schedule analysis techniques.

network optimization–Determining the optimal manufacturing and warehouse locations based on the goal of reducing total supply chain costs. This is accomplished by reviewing the supply chain to consolidate inventory-stocking locations. See: network design.

network path–Any continuous series of project activities connected by precedence relationships in a project schedule network diagram. See: network diagram.

network planning–A generic term for techniques that are used to plan complex projects. Two of the best-known network planning techniques are the critical path method (CPM) and the program evaluation and review technique (PERT).

networking–Developing relationships with people with common interests for the purposes of exchanging information and ideas and increasing awareness of a particular field.

neural network–A system made up of interconnected neurons sending signals to one another. Neural networks are designed to simulate the human brain in order to perform complex tasks.

new product development–Syn.: participative design/ engineering.

new product introduction–The development and release of an item that is new to a company's set of offerings.

newsvendor model–Syn.: newsvendor problem.

newsvendor problem–A problem in inventory management dealing with determining the single period (e.g., day or week) order quantity that will minimize the cost of sometimes having too much inventory and sometimes having too little. The name is derived from the scenario of a newsvendor determining how many copies of a daily paper must be stocked amid demand uncertainty. A model is used to deal with the problem by determining optimum inventory levels. Syn.: newsvendor model.

next-generation firewall (NGFW)–Network security that combines a traditional firewall with other filters, such as an intrusion prevention system and application controls.

NFT–Acronym for non-fungible token.

NGFW–Acronym for next-generation firewall.

NLP–Acronym for natural language processing.

NLRB–Acronym for National Labor Relations Board.

node–1) In supply chain management, a critical point where activities such as production, storage, transportation, and distribution occur. Nodes include suppliers, manufacturing facilities, warehouses, distribution centers, retailers, and customers. These nodes facilitate the flow of goods from raw materials to finished products delivered to consumers. 2) In project management, a point connected by arrows in a network.

noise–The unpredictable or random difference between the observed data and the true process. See: random variation.

nominal capacity–Syn.: rated capacity.

nominal group technique–A technique, similar to brainstorming, used by teams to generate ideas about a particular subject. Team members are asked to silently come up with as many ideas as possible and write them down. Each member is then asked to share one idea, which is recorded. After all the ideas are recorded, they are discussed and prioritized by the group.

nominal interest rate–The non-inflation-adjusted interest rate.

nominal trading partner–An organization or individual external to the firm that is part of the supply chain community but does not participate in the financial or operational management of the firm.

nomogram–A computational aid consisting of two or more scales drawn and arranged so that the results of calculations may be found by the linear connection of points on them. Historically, it was used for calculating economic lot sizes or sample sizes for work measurement observations. It also is called an alignment chart.

nonconforming material–Any raw material, part, component, or product with one or more characteristics that depart from the specifications, drawing, or other approved product description.

nonconformity–Failure to fulfill a specified requirement. See: blemish, defect, imperfection.

noncurrent assets–An accounting or financial term (balance sheet classification of accounts) representing the long-term resources owned by a company, including property, plant, and equipment.

nondurable goods–Goods whose serviceability is generally limited to a period of less than three years, such as perishable goods and semidurable goods.

nonevident failure–Failure occurring in either a product or a production process that is not immediately evident. This may be indicative of a faulty design.

nonexempt employee–A classification of employees or jobs for which compensation is by an hourly rate. The term is fully defined by the U.S. Department of Labor Fair Labor Standards Act, which regulates minimum wages and overtime for nonexempt employees. See: exempt position, nonexempt position.

nonexempt position–A position that requires the payment of overtime because it does not meet the test of executive, supervisory, or administrative activity as defined under the U.S. Fair Labor Standards Act. See: nonexempt employee.

non-fungible token (NFT)–A unique digital identifier of an asset that is stored as a token on a blockchain.

nongovernmental organization (NGO)–A legally constituted organization that operates independently from any government. The term is usually applied only to organizations that pursue some wider social aim with political aspects but that are not overtly political organizations, like political parties are. These types of organizations may be called civil society organizations or other names in some jurisdictions.

nonlinear programming–Programming similar to linear programming but incorporating either (1) a nonlinear objective function and linear constraints, (2) a linear objective function and nonlinear constraints, or (3) both a nonlinear objective function and nonlinear constraints. See: objective function.

nonproduction material–An indirect material or supply that is used in the manufacturing process or operation of the business but does not become part of the final product. See: maintenance, repair, and operating (MRO) supplies.

nonrenewable resource–An energy resource that once used up cannot be replaced. This includes coal, natural gas, oil, and nuclear energy.

nonscheduled hours–Hours when a machine is not generally available to be scheduled for operation, such as during nights, weekends, holidays, lunch breaks, major repairs, and rebuilding.

nonsignificant part number–A part number that is assigned to each part but does not convey any information about the part. Nonsignificant part numbers are identifiers, not descriptors. Ant.: significant part number.

non-value-added–An activity that does not add value to a product. An example is moving a product from one work center to another inside a facility. One aspect of continuous improvement is the elimination or reduction of non-value-added activities.

non-vessel-operating common carrier (NVOCC)–A consolidator of ocean freight shipments that operates similarly to a freight forwarder and issues its own bills of lading, thus acting as a carrier even though it does not own the means of transportation being used.

NOPAT–Acronym for net operating profit after taxes.

normal distribution–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.

normalize–To adjust observed data to a standard base.

North American Free Trade Agreement (NAFTA)–An agreement among the United States, Canada, and Mexico to promote economic prosperity by reducing trade barriers. It was replaced by the United States-Mexico-Canada Agreement (USMCA) in 2020.

no-touch exchange of dies (NTED)–The exchange of dies without human intervention.

NP chart–A control chart for evaluating the stability of a process in terms of the total number of units in a sample in which an event of a given classification occurs. Syn.: number of affected units chart.

NSN–Acronym for national stock number.

NTED–Acronym for no-touch exchange of dies.

number defective chart–Syn.: c-Chart.

number of affected units chart–Syn.: NP chart.

numerical control (NC)–A means of operating a machine tool automatically by the use of coded numerical instructions.

NVOCC–Acronym for non-vessel-operating common carrier.

O

O2C–Acronym for order-to-cash.

objective function–The goal or function that is to be optimized in a model. Most often it is a cost function that should be minimized subject to some restrictions or a profit function that should be maximized subject to some restrictions. See: linear programming, nonlinear programming.

object-oriented programming (OOP)–Within computer programming, the use of coding techniques and tools that reflect the concept of viewing the business environment as a set of elements (or objects) with associated properties (e.g., data, data manipulation or actions, inheritance). The objects encapsulate, through data and functions, the properties of the business that are of interest.

observational research–A form of research (frequently used in marketing research) in which data is gathered by direct observation of consumers in the marketplace. See: marketing research.

obsolescence–1) The condition of being out of date. 2) A loss of value occasioned by new developments that place the older property at a competitive disadvantage. 3) A factor in depreciation. 4) A decrease in the value of an asset brought about by the development of new and more economical methods, processes, or machinery. 5) The loss of usefulness or worth of a product or facility as a result of the appearance of better or more economical products, methods, or facilities. See: deterioration.

obsolete inventory–Inventory items that have met the obsolescence criteria established by the organization, such as inventory that has been superseded by a new model or otherwise has a lack of demand. Obsolete inventory will never be used or sold at full value. Disposing of the inventory may reduce a company's profit.

OC–Acronym for operating characteristic.

Occupational Safety and Health Act (OSHA)–A U.S. law that applies to all employers in the United States who are engaged in interstate commerce. Its purpose is to ensure safe and healthful working conditions by authorizing enforcement of the standards provided under the act.

occurrence factor–Within the repair or remanufacturing environment, the occurrence factor is associated with how often a repair is required to bring the average part to a serviceable condition (some repair operations do not occur 100 percent of the time). The factor is expressed at the operation level in the routing. See: repair factor, replacement factor.

ocean bill of lading–A contract between an ocean carrier and a shipper arranging for carriage of freight. It provides evidence of the carrier's receipt of the cargo and lists the origin and destination ports, rates, quantities, weight, and any special handling requirements. The shipper is responsible for all losses other than for negligence on the part of the ocean carrier.

OCR–Acronym for optical character recognition.

OD–Acronym for organizational development.

ODD–Acronym for earliest operation due date.

OECD–Acronym for Organization for Economic Cooperation and Development.

OEE–Acronym for overall equipment effectiveness.

OEM–Acronym for original equipment manufacturer.

offal material–The by-product or waste of production processes (e.g., chips, shavings, turnings).

offer–A contractual communication that proposes definite terms. A contract is created if the other party accepts those terms.

offgrade–A product whose physical or chemical properties fall outside the acceptable ranges.

offline–Computer work completed when disconnected either from the internet or from an intranet. This term also describes anytime a person, operation, or work center is not accessible or operating.

offload–1) To reschedule or use alternate routings to reduce the workload on a machine, work center, or facility. 2) To unload cargo from a transportation vehicle.

offset quantity–Syn.: overlap quantity.

offsetting–Syn.: lead time offset.

offshore–The use of resources from a different country than the original company's country. See: outsourcing.

OJT–Acronym for on-the-job training.

OLA–Acronym for operational level agreement.

omni-channel network–A cross-channel sales approach in which all sales channels, including online, mobile, telephonic, mail order, self-service, and physical retail establishments, are aligned and fulfillment processes are integrated to provide consumers with a seamless shopping experience in alignment with the company's brand proposition. Examples of this include integrated fulfillment, dedicated fulfillment, pool distribution, direct store delivery, store fulfillment, and flow-through fulfillment.

omnichannel order fulfillment–The ability to confirm, aggregate, orchestrate, and fulfill orders through multiple service points, including warehouses, stores, and suppliers, through the application of distributed order management, advanced warehouse management, and transportation management systems. The objective is to reduce fulfillment time and costs while enhancing the customer experience. Some of the network designs include integrated, dedicated, pool, direct-store-delivery, store, and flow-through fulfillment. See: distributed order management.

on order–The number or value of goods or services that have been ordered but not received at a location.

on-demand–Work that is completed only when demand occurs upon the placement of an order for that product or service.

one-card kanban system–A kanban system in which only a move card is used. Typically, the work centers are physically close, so no production card is required. In many cases, squares located between work centers are used as the kanban system. An empty square signals the supplying work center to produce a standard container of the item. Syn.: single-card kanban system. See: two-card kanban system.

one-piece flow–The technique of processing an item directly from one step to the next, one unit at a time. This approach reduces waste by shortening lead times and lines of communication, thus enabling quality problems to be identified more quickly. One-piece flow is closely associated with lean manufacturing and just-in-time (JIT) methodologies.

one-to-one marketing–A marketing strategy for personalizing messages for individual customers.

one-touch exchange of die (OTED)–The reduction or elimination of the setup effort required between operations on the same equipment. It is an exchange performed in a single motion rather than in multiple steps. See: single-minute exchange of die (SMED).

on-hand balance–The quantity shown in the inventory records as being physically in stock.

online requisitioning system–An e-procurement or sourcing platform that facilitates requisition orders to the purchasing department. The purchasing department reviews the requisition, performs sourcing and pricing, rejects or accepts the requisition, and releases the purchase order to the supplier. See: part requisition, purchase requisition.

on-order stock–The total of all outstanding replenishment orders for an item. The on-order stock amount increases when a new order is released and decreases when material is received against an order or when an order is canceled. See: scheduled receipt.

on-the-job training (OJT)–The learning of skills and necessary related knowledge useful for the job at the place of work or possibly while at work.

on-time delivery–A metric measuring the percentage of receipts that were received on time by customers. See: on-time in-full (OTIF).

on-time in-full (OTIF)–A delivery scoring system in which a target delivery goal—usually expressed as a percentage—is set and the deliverer tries to meet that delivery goal fully and by the delivery date. See: complete and on-time delivery (COTD), percentage of orders delivered in full.

on-time schedule performance–A measure (percentage) of meeting the customer's originally negotiated requested delivery date. Performance can be expressed as a percentage based on the number of orders, line items, or dollar value shipped on time.

OOP–Acronym for object-oriented programming.

open account payment–A method of payment for goods shipped in advance of payment in which the seller or exporter sends the buyer or importer an invoice requesting payment by a certain date.

open order–A customer order, manufacturing order, or purchased order that has been released but not yet filled. Syn.: released order. See: scheduled receipt.

open period–Accounting time period for which the books will still accept adjusting entries and postings. Ant.: closed period.

open system architecture–The capability of software and diverse hardware environments to communicate with each other through the use of standard messaging and protocols, respectively. See: modular system.

open tendering–The practice of allowing any supplier to make a bid for a product or service. The bid can be made through journals, websites, mass communication, social media, or e-procurement portals.

open-book contract–A contract-pricing practice in which the buying organization and supplier agree to a fair price paid for the service or products supplied. The supplier bills the customer based on the actual costs incurred for each type of service plus the agreed margin or include incentives above cost incurred by supplier. This type of arrangement is sometimes referred to as a cost-plus contract.

open-end purchase order–A purchase agreement in which the seller provides products or services on a pre-determined schedule over a period of time, such as 12 months, or until the full quantity has been purchased. See: blanket purchase order.

open-to-buy (OTB)–An inventory management technique, used primarily by retailers, for planning the money required to purchase future stock. It takes the inventory levels and planned sales of a category into account, as well as the category's contribution to the sales mix.

operating assets–An accounting or financial term representing the resources owned by a company for productive purposes (to generate a profit), including cash, accounts receivable (AR), inventories, equipment, and facilities.

operating characteristic (OC) curve–A graph used to determine the probability of accepting lots as a function of the quality level of the lots or processes when using various sampling plans. There are three types: (1) Type A curves, which give the probability of acceptance for an individual lot coming from finite production (will not continue in the future); (2) Type B curves, which give the probability of acceptance for lots coming from a continuous process; and (3) Type C curves, which, for a continuous sampling plan, give the long-run percentage of product accepted during the sampling phase.

operating cycle–The average period of time required to turn inventory into cash. This is usually accomplished by the purchase or production of goods, the sale of the product, and the receipt of cash. See: cash-to-cash cycle time.

operating efficiency–A ratio (represented as a percentage) of the actual output of a piece of equipment, department, or plant as compared with the planned or standard output.

operating environment–The global, domestic, environmental, and stakeholder influences that affect the key competitive factors, customer needs, culture, and philosophy of each individual company. This environment becomes the framework in which business strategy is developed and implemented. Syn.: business environment.

operating expense–The money spent by an organization for normal business operations.

operating exposure–The risk introduced by flexible exchange rates when operating in the global environment, including their effect on production, storage, and buying and selling prices.

operating leverage–A financial ratio used in break-even analysis that reflects the extent to which an organization's change in revenue impacts its operating income. Operating leverage is dependent upon the relationship between a firm's fixed and variable costs.

operating profit–Gross profit minus all expenses, including selling and administrative expenses and depreciation.

operating profit margin ratio–Earnings before interest and taxes divided by sales.

operating system–A set of software programs that controls the execution of the hardware and application programs. The operating system manages the computer and network resources through storage management, disk input/output, communications linkages, program scheduling, and monitoring system usage for performance and cost allocations.

operation–1) A job or task, consisting of one or more work elements, usually done essentially in one location. 2) The performance of any planned work or method associated with an individual, machine, process, department, or inspection.

operation chart–Syn.: routing.

operation costing–A hybrid cost accounting system that utilizes a combination of job costing and process costing approaches. It commonly is utilized in environments where units are produced in batches (as in job costing) but also undergo significant continuous processing (as in process costing).

operation description–The details of an activity or operation to be performed. The operation description is included in the routing document and could include setup instructions, operating instructions (feeds, speeds, heats, pressure, etc.), and required product specifications or tolerances.

operation due date–1) The date when an operation should be completed so that its order due date can be met. It can be calculated based on scheduled quantities and lead times. 2) A job sequencing algorithm (dispatching rule) giving earlier operation due dates higher priority.

operation duration–The total time that elapses between the start of the setup of an operation and the completion of the operation. Syn.: operation time.

operation list–Syn.: routing.

operation number–A sequential number, usually two, three, or four digits long (such as 010, 020, 030), that indicates the sequence in which operations are to be performed within an item's routing.

operation overlapping–The development of a manufacturing schedule that overlaps successive operations. Overlapping occurs when the completed portion of an order at one work center is processed at one or more succeeding work centers before the pieces left behind are finished at the preceding work centers. Syns.: lap phasing, overlapped schedule, telescoping. See: send ahead. Ant.: gapped schedule.

operation priority–1) The relative importance an operation is given based on its scheduled due date and/or start date, usually determined by the back-scheduling process. 2) The relative importance a job is given in a queue of jobs by a priority dispatching heuristic such as shortest processing time first or least slack remaining first.

operation reporting–The recording and reporting of every manufacturing (shop order) operation occurrence on an operation-to-operation basis.

operation setback chart–A graphical display of the bill of material (BOM) and lead-time information provided by the routing for each part. The horizontal axis provides the lead time from raw materials purchase to component manufacture to assembly of the finished product.

operation sheet–Syn.: routing.

operation splitting–Syn.: lot splitting.

operation start date–The date when an operation should be started so that its order due date can be met. It can be calculated based on scheduled quantities and lead times or on the work remaining and the time remaining to complete the job.

operation time–The total of setup and run time for a specific task. Syn.: operation duration.

operation yield–The ratio of usable output from a process, process stage, or operation to the input quantity, usually expressed as a percentage.

operational availability–The portion of time a system is available to sustain operations in full.

operational level agreement (OLA)–An agreement between a service provider and another part of the same organization. It supports the service provider's delivery of services to customers and defines the goods or services to be provided and the responsibilities of both parties.

operational performance measurement–A performance measurement related to machine, worker, process, or department efficiency; utilization; throughput; and inventory levels. See: performance objective, strategic performance measurements.

operational plan–A short-range plan and schedule detailing specific actions. Operational plans are more detailed than strategic and tactical plans and cover a shorter time horizon. See: operational planning, strategic planning, tactical planning.

operational planning–The process of setting goals and targets and establishing measures constrained by and targeted for achieving the strategic and tactical plans. See: operational plan, strategic planning, tactical planning.

operational technology (OT)–Systems and hardware that monitor processes, transactions, and devices to detect change.

operations–The group that produces the goods and/or services that a company sells.

operations management–1) The planning, scheduling, and control of the activities that transform inputs into finished goods and services. 2) A field of study that focuses on the effective planning, scheduling, use, and control of a manufacturing or service organization through the study of concepts from design engineering, industrial engineering, management information systems, quality management, production management, inventory management, accounting, and other functions as they affect the operation.

operations plan–Syn.: production plan.

operations planning–The planning of activities that transform inputs into finished goods and services.

operations research–1) The development and application of quantitative techniques to the solution of problems. More specifically, theory and methodology in mathematics, statistics, and computing are adapted and applied to the identification, formulation, solution, validation, implementation, and control of decision-making problems. 2) An academic field of study concerned with the development and application of quantitative analysis to the solution of problems faced by management in public and private organizations. Syn.: management science.

operations scheduling–The assignment of starting or completion dates to operations or groups of operations to show when these operations must be done if the manufacturing order is to be completed on time. These dates are used in the dispatching function. Syns.: detailed scheduling, order scheduling, shop scheduling.

operations sequence–The sequential steps for an item to follow in its flow through the plant. This information is normally maintained in the routing file.

operations sequence analysis–A method of planning a facility layout by using graphics to determine the placement of departments. The analysis is used to identify potential or existing roadblocks and increase efficiency.

operations sequencing–A technique for short-term planning of actual jobs to be run in each work center based upon capacity (i.e., existing workforce and machine availability) and priorities. The result is a set of projected completion times for the operations and simulated queue levels for facilities.

operations strategy–The total pattern of decisions that shape the long-term capabilities of an operation and their contribution to overall strategy. Operations strategy should be consistent with overall strategy. See: strategic plan.

operator flexibility–Training machine workers to perform tasks outside their immediate jobs and in problem-solving techniques to improve process flexibility. This is a necessary process in developing a fully cross-trained workforce.

opportunity cost–1) The return on capital that could have resulted had the capital been used for some purpose other than its present use. 2) The rate of return investors must earn to continue to supply capital to a firm.

optical character recognition (OCR)–A mechanized method of collecting data involving the reading of hand-printed material or special character fonts. If handwritten, the information must adhere to predefined rules of size, format, and locations on the form.

optical scanning–A technique for converting printed or written images or text into a digital format.

optimal order time–The period of time when an order must be placed for products in order to meet the required delivery date.

optimal path selection–The ability to select or adjust the optimal modes and routes for shipping a product given logistics requirements, hub locations, costs, planned shipments, and available transportation options.

optimization–Achieving the best possible solution to a problem in terms of a specified objective function.

optimization models–A class of mathematical models used when the modeler wishes to find the ideal (maximum or minimum) value of some objective function subject to a set of constraints.

option–A choice that must be made by the customer or company when customizing the end product. In many companies, the term option means a mandatory choice from a limited selection. See: feature.

option overplanning–Scheduling extra quantities of a master schedule option greater than the expected sales for that option to protect against unanticipated demand. This schedule quantity may be planned only in the period when new customer orders are currently being accepted, typically just after the demand time fence (DTF). This technique is usually used on the second level of a two-level master scheduling approach to create a situation in which more of the individual options than of the overall family are available. See: demand time fence (DTF), hedge, planning bill of material (BOM).

optional replenishment model–A form of independent demand item management model in which a review of inventory on hand plus inventory on order is made at fixed intervals. If the actual quantity is lower than some predetermined threshold, a reorder is placed for a quantity M minus x, where M is the maximum allowable inventory and x is the current inventory quantity. The reorder point (ROP) R may be deterministic or stochastic and in either instance is large enough to cover the maximum expected demand during the internal review plus the replenishment lead time. See: fixed-interval order system, fixed order period system, hybrid inventory system.

orchestrate–In SCOR DS, the activities associated with the integration and enablement of supply chain strategies.

order–A general term that refers to such diverse items as a purchase order, shop order, customer order, planned order, or schedule. In SCOR DS, it describes the activities associated with the customer purchase of products and services, including the attributes of location, payment methods, payments, fulfillment status, and other order data.

order backlog–A past-due or open customer order yet to be fulfilled. Syn.: backlog.

order batching–The process of gathering a group of orders or data before submitting to the next stage. This is often done to reduce ordering costs.

order confirmation–A document or transmission acknowledging the receipt and acceptance of a customer order or purchase order.

order consolidation profile–The process of filling the entire order of one customer by bringing all parts of the order together in one place. These items may or may not come from different places or departments.

order control–Control of manufacturing activities by individual manufacturing, job, or shop orders that are released and authorized to produce orders, which are distributed to production personnel. Order control sometimes implies an environment where all the components for a given order are picked and issued from a stocking location, all at one time, and then moved as a kit to manufacturing before any activity begins. It is most frequently seen in job shop manufacturing. See: shop floor control.

order cost–Syn.: ordering cost.

order cycle–The progression used by a company starting with receipt of a customer's order and ending with delivery to that customer.

order delivery–The duration of time between when the transportation carrier picks up a shipment and when it is received by the customer.

order entry–The process of accepting and translating what a customer wants into an order for the supplier. This can be as simple as creating shipping documents for finished goods in a make-to-stock (MTS) environment or a more complicated series of activities, including design efforts for make-to-order (MTO) or assemble-to-order (ATO) products. See: master schedule, order service.

order fill rate–The percentage of customer orders that are fulfilled completely. See: fill rate.

order fulfillment center–A facility, often a distribution center (DC), responsible for shipping goods to customers. See: order fulfillment process.

order fulfillment cycle time–The average time from order receipt to customer acceptance of the fulfilled order. See: order fulfillment lead time.

order fulfillment lead time–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.

order fulfillment process–Activities within the order-filling process, including order intake and promising, production and delivery, and order status reporting. See: order fulfillment center.

order interval–The time period between the placement of two successive orders.

order loser–An area or aspect of an organization in which poor performance can cause loss of business. For example, failure to meet customer expectations with delivery of the product is an order loser. See: order qualifier, order winner.

order management–The planning, directing, monitoring, and controlling of the processes related to customer orders, manufacturing orders, and purchase orders. Regarding customer orders, order management includes order promising; order entry; order pick, pack, and ship; billing; and reconciliation of the customer account. Regarding manufacturing orders, order management includes order release, routing, manufacture, monitoring, and receipt into stores or finished goods inventories. Regarding purchasing orders, order management includes order placement, monitoring, receiving, acceptance, and payment of supplier.

order multiple–An order quantity modifier applied after the lot size has been calculated that adjusts the order quantity to a predetermined multiple.

order penetration point–The point in time when a product becomes earmarked for a particular customer. Downstream from this point, the system is driven by customer orders; upstream processes are driven by forecasts and plans. See: booked orders, push-pull boundary.

order picking–The selection or retrieval of the required quantity of specific products for movement to a packaging area (usually in response to one or more shipping orders) and the documentation that the items were moved to shipping. Syn.: order selection. See: batch picking, discrete order picking, zone picking.

order placement–The commitment of a customer to buy a product and the subsequent administrative and data processing steps followed by the supplier. See: order transmittal.

order point–A set inventory level where, if the total stock on hand plus on order falls to or below that point, action is taken to replenish the stock. The order point is normally calculated as forecasted usage during the replenishment lead time plus safety stock. Syns.: reorder point (ROP), statistical order point, trigger level. See: fixed order quantity (FOQ) inventory model.

order point system–An inventory replenishment system based on the stock on hand plus on order. Syn.: statistical order point system. See: order point, reorder point (ROP), fixed order quantity (FOQ) inventory model, hybrid inventory system.

order point/order quantity system–Syn.: fixed order quantity (FOQ) inventory model.

order policy–A set of procedures for determining the lot size and timing for an order to balance inventory costs. See: lot sizing.

order policy code–A code that indicates the lot-sizing technique selected for a given item. Syn.: lot-size code.

order preparation–All activities relating to the administration, picking, and packaging of individual customer or work orders.

order preparation lead time–The time needed to analyze requirements and open order status and to create the paperwork necessary to release a purchase order or a production order.

order priority–The level of importance given to each order with respect to its characteristics such as urgency, value, customer, and shipping distance. Order priority determines which orders should be manufactured or fulfilled first to maximize customer satisfaction and profitability.

order processing–The activities required to administratively process a customer's order and make it ready for shipment or production.

order promising–The process of committing to a delivery date for a customer order. For make-to-order (MTO) products, this usually involves a check of uncommitted material and availability of capacity, often as represented by the master schedule available-to-promise (ATP). Syn.: customer order promising. See: available-to-promise (ATP), order service.

order qualifier–A competitive characteristic that a firm must exhibit to be a viable competitor in the marketplace. For example, a firm may seek to compete on characteristics other than price, but in order to qualify to compete, its costs and the related price must be within a certain range to be considered by its customers. Syn.: qualifiers. See: order loser, order winner.

order quantity–Syn.: lot size.

order quantity modifier–An adjustment made to an order quantity's normal lot-sizing rule due to special considerations (e.g., scrap, testing, volume discounts, etc.).

order quotation system–A formal process for receiving, managing, and responding to requests for quotes (RFQs) from customers.

order release–The activity of releasing materials to a production process to support a manufacturing order. See: planned order release.

order reporting–The process of recording and reporting the start and completion of the manufacturing order (shop order) in its entirety.

order scheduling–Syn.: operations scheduling.

order selection–Syn.: order picking.

order service–The function that encompasses receiving, entering, and promising orders from customers, distribution centers (DCs), and interplant operations. Order service is also typically responsible for responding to customer inquiries and interacting with the master scheduler on availability of products. In some companies, distribution and interplant requirements are handled separately. See: order entry, order promising.

order shipment–Activity that extends from the time the order is placed upon the vehicle for movement until the order is received, verified, and unloaded at the buyer's destination.

order transmittal–The process of transferring order information from the customer to the supplier who will fulfill the request. See: order placement.

order winner–A competitive characteristic that causes a firm's customers to choose that firm's goods and services over those of its competitors. Order winners can be considered to be competitive advantages for the firm. Order winners usually focus on one (rarely more than two) of the following strategic initiatives: price or cost, quality, delivery speed, delivery reliability, product design, flexibility, aftermarket service, and image. See: order loser, order qualifier.

ordering cost–The costs an organization incurs each time it places an order. Ordering cost is used in determining order quantities and includes costs related to the administrative work of preparing, releasing, and monitoring orders and paying invoices; the physical handling of goods; receiving and inspection; and setup, as applicable. Syn.: order cost. See: acquisition cost, inventory cost.

order-oriented finite loading–A set of finite loading techniques to schedule orders according to order-level priority rules. The techniques aim to either (1) maximize capacity utilization or (2) deliver a high proportion of on-time orders with low work in process (WIP). See: constraint-oriented finite loading, drum-buffer-rope (DBR).

order-to-cash (O2C) cycle–The activities and processes that take place from the time an order is placed by a customer until payment is received and credited. The goal is to translate sales into financial benefit as rapidly as possible. See: cash conversion cycle.

order-to-delivery cycle–The period of time that starts when the customer places an order and ends when the customer receives the order.

order-up-to level–Syn.: target inventory level.

organization chart–A graphical depiction of relationships between people who work together.

Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises–A set of recommendations about responsible business conduct addressed by governments to multinational enterprises (MNEs) operating in or from adhering countries that encourage and maximize the positive impact MNEs can make to sustainable development and enduring social progress. See: multinational corporation.

organizational breakdown structure–In project management, a representation of a project's organization relating work packages to organizational units.

organizational change management–A set of practices designed to foster the support of people who champion new technologies, new operating practices, and new products and services that will transform the organization, maintaining its viability and improving its competitive position in step with changes in the business environment in which it functions.

organizational design–The creation of an organizational structure to support the strategic business plans and goals of an enterprise (e.g., for-profit versus not-for-profit companies). Given the mission and business strategy, the organizational structure design provides the framework within which the business's operational and management activities will be performed.

organizational development (OD)–The process of building and strengthening core competencies and organizational capabilities that enable the execution of the business strategy and provide a sustainable competitive advantage over time. It includes staffing the organization, building core competencies and organizational capabilities, and continuous improvement initiatives in response to the changing business environment.

organizational driver–An element that determines an organization's structure, culture, and focus. Drivers often impact how value is generated, risks are avoided, or performance is measured. Organizational drivers should be aligned with the company strategies and business objectives.

organizational environment–The external factors (e.g., laws and regulations, technology, economy, competition) and internal factors (e.g., the domain of products and services to be provided, the processes to be executed, the organizational structure) that affect an organization's performance. See: external environment, internal environment.

original equipment manufacturer (OEM)–1) A manufacturer that buys and incorporates another supplier's products as parts or subassemblies in its own products. 2) A manufacturer of parts or products that are purchased by a value-added reseller (VAR) and sold directly under its own branding or used in the production of a more complex product.

orthogonal array–A tool used to maintain independence between different iterations of a product design experiment. This quality analysis technique was first introduced Genichi Taguchi.

OS&D–Acronym for over, short, and damaged.

OSHA–Acronym for Occupational Safety and Health Act.

OSI–Acronym for open systems interconnection.

OT–Acronym for operational technology.

OTA–Acronym for over-the-air.

OTB–Acronym for open-to-buy.

OTED–Acronym for one-touch exchange of die.

OTIF–Acronym for on-time in-full.

out of spec–A term used to indicate that a unit does not meet a given specification.

out of stock–A situation in which there is no inventory at a location available for sale to the customer or use by a process. See: stockout.

outbound consolidation–The gathering of a number of small shipments to a variety of customers into a larger load, which is then shipped to a point near the customers where it is broken down for delivery.

outbound inventory–Goods shipping from a plant or warehouse to a customer or another facility. See: in-transit inventory, outbound consolidation, pipeline stock, transportation inventory.

outbound logistics–The group of processes involved in the shipping and holding of products after they are completed until they are received by the customer.

outbound stockpoint–A designated location near the point of use on a plant floor to which material produced is taken until it is pulled to the next operation.

outlier–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.

out-of-control process–A process in which the statistical measure being evaluated is not in a state of statistical control. Data suggests that the process is being affected by an assignable cause instead of only random variation. See: statistical process control (SPC). Ant.: in-control process.

out-of-pocket cost–An expense such as labor, freight, or insurance that an individual or organization pays directly, as opposed to depreciation, which represents the reduction in value of a capital asset over time due to wear, deterioration, or obsolescence.

outpartnering–The strategic process of developing close partnerships with supply chain partners to enhance collaboration, joint problem solving, knowledge sharing, and the leveraging of complementary core competencies. See: customer-supplier partnership, supplier partner.

output–1) The product being completed by a process or facility. 2) A document or information generated by a process or system.

output control–A technique for controlling output in which actual output is compared with planned output to identify problems at the work center or facility. See: input/output control (I/O control).

output standard–The expected number of units from a process against which actual output will be measured.

outside in–An approach organizations use to incorporate environmental and sustainability goals into business objectives.

outside shop–Syn.: supplier.

outsourced cost of goods sold (COGS)–Expenses incurred by an organization for processes performed on its raw materials, work-in-process, or finished goods by external suppliers. For example, the cost of a third-party logistics (3PL) provider performing final assembly of finished goods would contribute to the manufacturer's cost of goods sold (COGS).

outsourcing–The process of having suppliers provide goods and services that were previously provided internally. Outsourcing involves substitution—the replacement of internal capacity and production by that of the supplier. See: offshore, subcontracting. Ant.: insourcing.

over, short, and damaged (OS&D) report–A report submitted by the consignee listing the details of all freight that arrived damaged or in incorrect quantities compared with those shown on the bill of lading (B/L).

overall equipment effectiveness (OEE)–The measurement of the effectiveness of a company's equipment based on the product of its availability, performance, and production quality.

overall factors–Syn.: capacity planning using overall factors (CPOF).

overall value at risk (VAR)–The sum of the probability of risk events times the monetary impact of the events. Overall VAR can impact any core supply chain functions (e.g., Plan, Order, Source, Transform, Fulfill, and Return) or key dependencies.

overhead–The costs incurred in the operation of a business that cannot be directly related to the individual goods or services produced. These costs, such as utilities, supervision, and maintenance, are grouped in several pools (e.g., department overhead, factory overhead, general overhead) and assigned to units of goods or services by some standard allocation method such as direct labor hours, direct labor dollars, or direct materials dollars. Syn.: burden. See: expense.

overhead allocation–In accounting, the process of assigning indirect costs to a product based on a predetermined rate.

overhead base–The denominator used to calculate the predetermined overhead rate used in applying overhead (e.g., estimated direct labor hours, estimated direct labor dollars).

overhead pool–The collection of overhead costs that are to be allocated over a specified group of products.

overissue–Syn.: excess issue.

overlap quantity–The number of items that need to be run and sent ahead to the following overlap operation before the following operation can begin. Syn.: offset quantity. See: process batch, transfer batch.

overlapped production–A method of production in which completed units of a production lot are processed at one or more succeeding stations while remaining units continue to be processed at the original workstation. See: overlapped schedule.

overlapped schedule–Syn.: operation overlapping. See: overlapped production.

overload–A condition in which the total hours of work outstanding at a work center exceed that work center's capacity.

overpack–A larger container used by a single shipper to consolidate multiple packages into a single unit to reduce total transportation costs, simplify handling, and/or provide additional protection against damage during shipment.

overrun–1) The quantity received from manufacturing or a supplier that is in excess of the quantity ordered. 2) The condition resulting when expenditures exceed the budget.

overstated master production schedule (MPS)–A schedule that includes either past-due quantities or quantities with loads that are greater than the current capacity and material availability allow. An overstated master production schedule (MPS) should be modified into a feasible schedule before running material requirements planning (MRP).

overstock–A supply or quantity of inventory in excess of demand or requirements.

over-the-air (OTA)–A method for updating internet of things (IoT) and other devices using wireless networks.

overtime–Work beyond normal established working hours that usually requires that a premium be paid to the workers.

owner's equity–An accounting or financial term (balance sheet classification of accounts) representing the residual claim by the company's owners or shareholders, or both, to the company's assets less its liabilities. See: asset, balance sheet, liability, net assets.

P

P chart–A control chart used to evaluate the stability of a process in terms of the percentage of the total number of units in a sample in which an event of a given classification occurs over time. P charts are used when it is difficult or costly to make numerical measurements or when combining multiple types of defects into one measurement is desired. Syn.: percent chart.

P:D ratio–A ratio in which P is the manufacturing lead time and D is the customer required delivery time. If the P:D ratio exceeds 1.00, either a customer's order will be delayed or production will start as the result of a forecast (make-to-stock (MTS)) or an anticipated customer order (make-to-order (MTO)).

P2P–Acronym for peer-to-peer.

PaaS–Acronym for platform as a service.

PAC–Acronym for production activity control.

pace rating–Syn.: performance rating.

pacemaker–In lean, the resource that is scheduled based on the customer demand rate for the value stream. This resource performs an operation or process that governs the flow of materials along the value stream to maintain a smooth flow through the manufacturing plant. A larger buffer is maintained for the pacemaker than other resources so that it can maintain continuous operation. See: constraint, pacing process.

pacing process–The process in a production line used to signal all other processes in line of the time to produce another unit. It is often the final process in the production line, but it does not have to be. The pace of the pacing process should reflect the takt time. See: pacemaker.

package-to-order (PTO)–A production environment in which the packaging of a good or service is delayed until after the receipt of a customer order. The physical item is typically common across many different customers, and the packaging determines the end product for the order.

packaging–Materials surrounding an item to protect it from damage during storage, handling, and transportation. See: packing and marking.

packet filtering–Passing or blocking data packets by a firewall, through the review of the header of each packet. See: application-level gateway.

packing and marking–The activities of unitizing one or more items of an order, packing them into an appropriate container for safe shipping, and marking and labeling the container with required shipment data for identification, handling, and tracking. See: packaging.

packing list–Syn.: packing slip.

packing slip–A document that itemizes in detail the contents of a particular package, carton, pallet, or container for shipment to a customer. The details include a description of the items, the shipper's or customer's part number, the quantity shipped, and the stock keeping units (SKUs) of the items shipped. The packing slip accompanies the shipment to help the consignee verify the contents received. Syn.: packing list.

pack-out department–The department that performs the final steps (often including packaging and labeling) before shipment to the customer. See: final assembly department.

paired-cell overlapping loops of cards with authorization (POLCA)–A material control and replenishment system developed to be used with quick-response manufacturing (QRM) in cellular manufacturing environments with a low-volume, high-variety product mix. It is a hybrid push-pull system in which the push order release time is generated by an enterprise resource planning system. See: quick-response manufacturing (QRM).

pallet–A platform designed to be loaded with materials or packages and moved by a forklift or pallet jack.

pallet jack–A type of material handling equipment that lifts a pallet just high enough off the ground for a worker to move the pallet around the floor of a warehouse, distribution center, or retail store. Pallet jacks can be either manual or powered.

pallet position–1) A specific space on the floor of a warehouse or in a racking system that can hold a standard pallet. 2) A measurement of warehouse or transportation capacity that represents the amount of inventory that can be stored or transported.

pallet rack–A single- or multiple-level structure for storage used to support high stacking of palletized loads.

pallet ticket–A label or document attached to a pallet of goods displaying a description of the product, the part number, and the quantity of the product on the pallet.

palletization–The act of stacking cargo on a pallet and securing it with straps or shrink wrap to improve materials handling efficiency. See: containerization, unitization.

panel consensus–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.

paperless purchasing–A purchasing operation that does not employ purchase requisitions or hard-copy purchase orders. In practice, however, a small amount of paperwork may remain. See: e-procurement.

par level–In service operations, the minimum amount of inventory that must be on hand to support daily operations. This term is sometimes expressed as PAR level, which stands for "periodic automatic replenishment."

parallel conversion–Syn.: parallel implementation strategy.

parallel engineering–Syn.: participative design/engineering.

parallel implementation strategy–A system implementation technique whereby the current system and the new system are both executed for some period of time. The results of the two systems are compared to ensure that the new system is executing properly. When a level of confidence is built that the new system is executing properly, the old system is turned off, and the new system becomes the designated business system. Syn.: parallel conversion.

parallel schedule–The use of two or more machines or job centers to perform identical operations on a lot of material. Duplicate tooling and setup are required.

parameter–1) In statistics, a value that defines the characteristics or behavior of a population such as mean or standard deviation. 2) In operations, a factor or constraint that affects the way an activity is performed. 3) In mathematics, a constant value that determines the behavior of a function.

parameter design–The specification of the product characteristics and production process that will create the expected product performance.

parametric estimation–The use of statistical and historical data to estimate activity parameters such as time or budget.

parent item–The item produced from one or more components.

parent-child relationship–The logical linkage between higher- and lower-level items in the bill of material (BOM).

Pareto analysis–Use of Pareto's law in prioritizing or ranking a range of items to separate the vital few from the trivial many. See: 80-20 rule.

Pareto chart–A bar graph that displays the results of a Pareto analysis with the bars displayed from longest on the left to shortest on the right. Pareto charts often also include a line graph measured on a secondary vertical axis on the right representing the cumulative percentage of the total.

Pareto diagram–Syn.: Pareto chart.

Pareto's law–A principle first observed by Italian economist Vilfredo Pareto that states that a small percentage of a group accounts for the largest fraction of its impact or value. In ABC classification, for example, 20 percent of the inventory items may constitute 80 percent of the inventory value. See: 80-20 rule, ABC classification.

parity–The condition where company performance is basically equivalent to that of competitors in the same market. This criterion would be deemed sufficient for products and processes for which the company does not seek to gain and hold marketplace leadership. Firms should strive not to perform below this base benchmark.

parking lot–A meeting technique whereby off-topic discussions are noted, often on a flip chart or whiteboard, for possible inclusion in future agendas.

part–A material item that is used as a component and is not an assembly, subassembly, blend, intermediate, etc.

part coding and classification–A method used in group technology (GT) to identify the physical similarity of parts.

part family–A collection of parts grouped for further managerial analysis or focus.

part master record–Syn.: item record.

part number–Syn.: item number.

part period balancing (PPB)–A dynamic lot-sizing technique that establishes order horizons such that each order covers the demand requirements for the number of periods whereby the total holding cost of the order is as close as possible to the ordering cost. This method uses a look ahead-look back technique to determine whether previous or future demands should be added to the current order. See: discrete order quantity, dynamic lot sizing, least total cost.

part record–Syn.: item record.

part requisition–An authorization that identifies the item and quantity required to be withdrawn from an inventory. Syn.: requisition. See: purchase requisition.

part standardization–The planned elimination of superficial, accidental, and deliberate differences between similar parts in the interest of reducing part and supplier proliferation.

part type–A code for a component within a bill of material (BOM) (e.g., regular, phantom, or reference).

partial order–A shipment received or shipped that contains fewer units than the amount ordered.

partial productivity factor–Syn.: single-factor productivity.

participative design/engineering–The simultaneous participation of all the functional areas of the firm, and often major suppliers and customers, in the product design process. The intent is to enhance the design with the inputs of all the key stakeholders. Such a process should ensure that the final design meets all the needs of the stakeholders and should ensure a product that can be quickly brought to the marketplace while maximizing quality and minimizing costs. Syns.: co-design, concurrent design, concurrent engineering, new product development, parallel engineering, simultaneous design/engineering, simultaneous engineering, team design/engineering. See: early manufacturing involvement.

participative management–A system that encompasses various activities of high involvement in which subordinates share a significant degree of decision-making power with their immediate superiors. Participative management draws on the rationale that everyone in an organization is capable of and willing to help guide and direct the organization toward agreed-on goals and objectives. See: employee empowerment.

partner relationship management (PRM)–A business strategy and set of application tools designed to increase the long-term value of a firm's customer channel network through partner recruitment, development, and profiling; timely communication of marketplace opportunities; sales management; services management; collaboration to improve sales, productivity, and competitiveness; and metrics ensuring that each trading partner contributes to customer satisfaction.

partnering–The act of one organization committing to a long-term relationship with another organization based on trust and a shared concept of how to satisfy the customer.

partnership–1) A form of business ownership that is not organized as a separate legal entity (i.e., unincorporated business) but entails ownership by two or more persons. See: private ownership, public ownership, sole proprietorship. 2) In a supply chain, a relationship based on trust, shared risk, and shared rewards aimed toward achieving a competitive advantage.

parts bank–1) An accumulation of inventory between operations to keep a subsequent operation running despite interruptions in the preceding operations. See: buffer. 2) A stockroom or warehouse containing contents that should be controlled like the contents of a bank.

parts list–A list of parts, materials, and components required to make an item. See: single-level bill of material (BOM).

parts planner–Syn.: material planner.

part-to-picker system–A classification of materials handling equipment for order picking in which the pick location is brought to a stationary order picker (e.g., via a carousel or automated storage and retrieval system (AR/RS)).

passenger-mile–A unit of measure in transportation representing the movement of one passenger over a distance of one mile. For example, a bus carrying 40 passengers for 100 miles would accrue 4,000 passenger miles.

passive data gathering–The collection of data whereby a customer initiates the transaction process by sharing feedback via a paper or digital form. The firm develops the feedback form, but the customer initiates the use of it.

passive tag–A radio frequency identification (RFID) tag that does not actively transmit data and is not self-powered. See: radio frequency identification (RFID).

past-due order–A line item on an open customer order that has an original scheduled ship date that is earlier than the current date. Syns.: delinquent order, late order, backorder. See: backlog.

path–In project management, a set of serially related activities in a network diagram.

path convergence–In project management, the point in a network diagram where one or more parallel paths come together. A delay on any of the parallel paths can conceivably delay network completion.

path divergence–In project management, the existence of parallel network paths exiting from a single node.

path float–Syn.: float.

pattern recognition–The classification of raw data based on experience or data analysis tools, such as machine learning (ML) algorithms.

pay for knowledge–A pay restructuring scheme by which competent employees are rewarded for the knowledge they acquire before or while working for an organization, regardless of whether such knowledge is actually being used at any given time.

pay point–Syn.: counting point.

payback–A method of evaluating an investment opportunity that provides a measure of the time required to recover the initial amount invested in a project. See: capital budgeting, return on investment (ROI).

payback period–The period of time required for the stream of cash flows resulting from a project to equal the project's initial investment.

payment terms–Conditions surrounding payment for a sale, providing a time frame in which a customer can pay without late penalties or additional fees. The payment terms may also specify an optional early payment deadline that would trigger a discount for the customer. See: terms and conditions.

PDCA–Acronym for plan-do-check-action.

PDF–Acronym for portable document format.

PDM–Acronym for product data management.

PE ratio–Abbreviation for price to earnings ratio.

peak demand–A quantity during a specific time period when demand is greater than at all other times.

peer-to-peer (P2P) networking–A network architecture where all nodes (peer) are equal, can perform the same tasks, and share resources, with no central control.

pegged requirement–A requirement that shows the next-level parent item (or customer order) as the source of the demand.

pegging–In material requirements planning (MRP) and master scheduling, the ability to identify for a given item the sources of its gross requirements and/or allocations. Pegging can be thought of as active where-used information. See: capacity pegging, requirements traceability, where-used list.

penetration pricing–The introduction of a new product below its long-run price to secure entry into a market.

people involvement–Syn.: employee involvement (EI).

perceived quality–One of the eight dimensions of quality that refers to a subjective assessment of a product's quality based on criteria defined by the observer.

percent chart–Syn.: P chart.

percent complete–A comparison of work completed with the current projection of total work required.

percent of fill–Syn.: customer service ratio. See: fill rate.

percent recycled waste–A metric representing the percentage of solid waste that is recycled.

percent value-added time–The percentage of total cycle time that is spent on activities that provide value to the product or customer.

percentage of orders delivered in full–The proportion of orders in which all of the items are received by the appropriate customer in the quantities committed. See: on-time in-full (OTIF).

perfect condition percentage–The proportion of orders delivered in an undamaged state that meet specifications, have the correct configuration, are faultlessly installed (as applicable), and are accepted by the customer.

perfect order–1) An order in which the seven Rs—the right product, the right quantity, the right condition, the right place, the right time, the right customer, and the right cost—are satisfied. 2) A fulfillment metric used to measure order proficiency, including being on time, complete, accurate, and undamaged.

perfect order fulfillment–A measure of an organization's ability to deliver a perfect order.

perfect pick put-away–The practice of ensuring that items are in the correct quantity, physical location, and condition so that they can be picked accurately when they are ordered.

performance–1) The degree to which an employee or group applies skill and effort to an operation or task as measured against an established standard. 2) One of the eight dimensions of quality that refers to product attributes pertaining to the functioning of a product (e.g., horsepower, signal-to-noise ratio, or decibel output). 3) One of the four parts of the Supply Chain Operations Reference (SCOR) model. This section contains the standard metrics to describe process performance and define strategic goals.

performance and event management system–A system that records and measures the performance of key supply chain processes. With this data, employees can determine when the key processes have changed and why they have changed. This data then is utilized to adjust the existent data. See: supply chain event management (SCEM).

performance appraisal–Supervisory or peer analysis of work performance. This appraisal may be made in connection with wage and salary review, promotion, transfer, or employee training.

performance benchmarking–Syn.: competitive benchmarking. See: benchmarking, process benchmarking.

performance bond–A guarantee of satisfactory work completion that is executed in connection with a contract and that secures the performance and fulfillment of all the undertakings, covenants, terms, conditions, and agreements contained in the contract.

performance criterion–A characteristic to be measured (e.g., parts per million defective or business profit) in a performance measurement system. See: performance measure, performance measurement system, performance standard.

performance gap–The difference between the actual performance level and the expected performance level.

performance management–A process that proactively ensures that the goals of an operating entity (e.g., an organization, a department, or an employee) are consistently being met efficiently and effectively.

performance measure–In a performance measurement system, the actual value measured for a criterion. See: performance criterion, performance measurement system, performance standard.

performance measurement baseline–An approved plan used to compare against actual execution to identify variances for management control.

performance measurement system–A system for collecting, measuring, and comparing a measure to a standard for a specific criterion for an operation, item, good, service, business, etc. Syn.: metric. See: performance criterion, performance measure, performance standard.

performance measurement unit–A measure of system performance, such as time, cost, error rate, or accuracy rate.

performance objective–A measurement that enables the firm to monitor whether or not the firm's strategy is being accomplished. Thus, the measurement should be aligned to strategy. Performance objectives may differ based on the hierarchical level of the firm (e.g., department, business unit, or corporation) and should be aligned with the corresponding strategy for that level. See: operational performance measurement, strategic performance measurements.

performance rating–Observation of worker performance that evaluates the productivity of workers as a percentage of the standard or normal worker performance. Syn.: pace rating.

performance standard–In a performance measurement system, the accepted, targeted, or expected value for the criterion. See: performance criterion, performance measure, performance measurement system.

performance variance–The difference between a performance standard and actual performance.

performing organization–In project management, the enterprise directly involved in the execution of work.

period capacity–The number of standard hours of work that can be performed at a facility or work center in a given time period.

period cost–A cost related to a period of time rather than a unit of product (e.g., marketing costs or property taxes).

period order quantity (POQ)–A lot-sizing technique under which the lot size is equal to the net requirements for a given number of periods (e.g., weeks into the future). The number of periods to order is variable, each order size equalizing the holding costs and the ordering costs for the interval. See: discrete order quantity, dynamic lot sizing, fixed order period system, fixed order quantity (FOQ), fixed-period quantity.

periodic inventory–A physical inventory taken at some recurring interval (e.g., monthly, quarterly, or annual physical inventory). See: physical inventory.

periodic maintenance–Syn.: preventive maintenance (PM).

periodic replenishment–A method of aggregating requirements to place deliveries of varying quantities at evenly spaced time intervals rather than variably spaced deliveries of equal quantities.

periodic review system–Syn.: fixed order interval inventory model.

perishability–The fact that an item has a limited shelf life and may be fragile and require special handling.

permission marketing–Syn.: relationship marketing.

perpetual inventory–An inventory recordkeeping system in which each transaction in and out is recorded and a new balance is computed.

perpetual inventory record–A computer record or manual document on which each inventory transaction is posted so that a current record of the inventory is maintained.

perpetual review system–An inventory management strategy that monitors inventory levels continuously to determine when replenishment orders should occur to limit stockouts and optimize inventory levels. A perpetual review system is typically implemented using a fixed order quantity (FOQ) and a reorder point (ROP). See: continuous review system.

personal fatigue and unavoidable delay allowance–Factor by which the motion study term "normal time" is increased to allow for personal needs and unavoidable delays.

personal protective equipment (PPE)–Items worn or held by an individual to protect against or minimize exposure to workplace hazards or risks, including physical impact, electricity, heat, chemicals, biohazards, and airborne particulate matter.

personnel class–A means to describe a grouping of people with similar characteristics for purposes of scheduling and planning.

PERT–Acronym for program evaluation and review technique.

PESTLE analysis–An analysis of the political, economic, social and ethical, technological, legal, and environmental factors in the external environment of an organization that can affect performance. This analysis often is used in conjunction with a SWOT (strengths, weaknesses, opportunities, threats) analysis. It aids organizations in determining the environment in which they operate. See: environmental scanning.

PFEP–Acronym for plan for every part.

phantom bill of material (BOM)–A BOM coding and structuring technique used primarily for transient (nonstocked) subassemblies. For the transient item, lead time is set to zero and the order quantity to lot-for-lot. A phantom BOM represents an item that is physically built but rarely stocked before being used in the next step or level of manufacturing. This permits material requirements planning (MRP) logic to drive requirements straight through the phantom item to its components, although the MRP system usually retains its ability to net against any occasional inventories of the item. This technique also facilitates the use of common bills of material for engineering and manufacturing. Syns.: blowthrough, transient bill of material (BOM). See: pseudo bill of material (BOM).

phishing–The act of sending an email pretending to be from a legitimate entity to obtain personal information, such as usernames and passwords.

physical distribution–Syn.: distribution.

physical inventory–1) The actual inventory itself. 2) The determination of inventory quantity by actual count. Physical inventories can be taken on a continuous, periodic, or annual basis. Syns.: annual inventory count, annual physical inventory. See: periodic inventory.

physical supply–The movement and storage of goods from suppliers to manufacturing. The cost of physical supply is ultimately passed on to the customer.

pick and place–Equipment that picks up parts from one station on an assembly line and places them on the next.

pick date–The start date of picking components for a production order. On or before this date, the system produces a list of orders due to be picked, pick lists, tags, and turnaround cards.

pick on receipt–A practice in which a product is unloaded from an inbound vehicle and loaded directly onto an outbound vehicle. Product is received and picked simultaneously, never residing in the warehouse. Pick on receipt is similar to cross-docking.

pick slots–Areas on shelves in a warehouse where products are stored.

picker-to-part system–A materials handling approach for order picking in which the picker goes to the product location (e.g., forklifts or order picking trucks).

picking–1) The process of withdrawing from stock the components to make assemblies or finished goods. 2) In distribution, the process of withdrawing goods from stock to ship to a distribution warehouse or to a customer.

picking list–A document that lists the material to be picked for manufacturing or shipping orders. Syns.: disbursement list, material list, stores issue order, stores requisition.

pick-to-light–A pick system that uses software to light up displays at each pick location to guide the human picker to the necessary picking location.

pick-to-trailer–An order-picking system that allows the picker to transfer materials to the trailer from the pick source without any confirmation or checking stages.

pick-to-voice system–A method of performing order-picking activities in a warehouse or distribution center (DC) using voice recognition technology. Syn.: voice pick system.

pickup and delivery costs–Carrier charges for a shipment pickup plus the weight of that shipment. Costs can be reduced if several smaller shipments are consolidated and picked up in one trip.

piece parts–Individual items in inventory at the simplest level in manufacturing (e.g., bolts and washers).

piece rate–The amount of money paid for a unit of production. It serves as the basis for determining the total pay for an employee working in a piecework system.

piece rate pay system–A compensation system based upon the volume of output of an individual worker.

piecework–Work done on a piece rate.

piggyback–Syn.: trailer on a flatcar (TOFC).

pilot–Syn.: pilot test.

pilot lot–A relatively small preliminary order for a product. The purpose of this small lot is to correlate the product design with the development of an efficient manufacturing process.

pilot order–Syn.: experimental order.

pilot plant–A small-scale production facility used to develop production processes and to manufacture small quantities of new products for field testing and so forth. Syn.: semiworks.

pilot test–1) In computer systems, a test before final acceptance of a new business system using a subset of data with engineered cases and documented results. 2) Generally, production of a quantity to verify manufacturability, customer acceptance, or other management requirements before implementation of ongoing production. Syns.: pilot, walkthrough.

pinwheel loading–Loading the pallets in alternate directions by placing one pallet straight and one pallet sideways to more fully utilize space in a trailer or container.

Pipeline and Hazardous Material Safety Administration (PHMSA)–A U.S. Department of Transportation (DOT) agency responsible for developing and enforcing regulations for the safe, reliable, and environmentally sound movement of energy and other hazardous materials by land, sea, and air, including pipelines.

pipeline inventory–Syn.: pipeline stock.

pipeline stock–Inventory in the transportation network and the distribution system, including the flow through intermediate stocking points. The flow time through the pipeline has a major effect on the amount of inventory required in the pipeline. Time factors involve order transmission, order processing, scheduling, shipping, transportation, receiving, stocking, review time, and so forth. Syn.: pipeline inventory. See: distribution system, transportation inventory.

place–One of the four Ps (product, price, place, and promotion) that constitute the set of tools used to direct the business offering to the customer. Place is the distribution tactic used to provide the product to the customer. Distribution answers the questions of where, when, and how the product is made available. See: four Ps.

place utility–Usefulness to the customer created by having the product delivered to a desired location.

plain boxcar–An enclosed railcar with side doors of different sizes and adjustable bulkheads. It is used to carry most loads.

plan–A predetermined course of action over a specified period of time to accomplish a specific set of adaptive objectives. In the SCOR DS model, this specifically refers to the activities associated with developing road maps to operate the supply chain.

plan for every part (PFEP)–A method of materials management that involves the use of kanban signals to suppliers for replenishment along with timed delivery routes and supermarket locations broken down by value stream.

plan stability–The percent difference between the production that was planned and the production that was actually completed. The numerator is the difference between actual and planned production, and the denominator is the planned production. This information then is used to adjust production standards.

plan-do-check-act (PDCA)–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.

plan-do-check-act (PDCA) cycle–Syn.: plan-do-check-act (PDCA).

planned adjustment factor–See: seasonal index.

planned finish date–Syn.: scheduled finish date.

planned issue–A disbursement of an item predicted by material requirements planning (MRP) through the creation of a gross requirement or allocation. Syn.: controlled issue.

planned issue receipt–A transaction that updates the on-hand balance and the related allocation or open order.

planned load–The standard hours of work required by planned production orders.

planned order–A suggested order quantity, release date, and due date created by the planning system's logic when it encounters net requirements in processing material requirements planning (MRP). In some cases, it can also be created by a master scheduling module. Planned orders are created by the computer, exist only within the computer, and may be changed or deleted by the computer during subsequent processing if conditions change. Planned orders at one level will be exploded into gross requirements for components at the next level. Planned orders, along with released orders, serve as input to capacity requirements planning (CRP) to show the total capacity requirements by work center in future time periods. See: planning time fence.

planned order receipt–The quantity planned to be received at a future date as a result of a planned order release. Planned order receipts differ from scheduled receipts in that they have not been released. Syn.: planned receipt.

planned order release–A row on a material requirements planning (MRP) table that is derived from planned order receipts by taking the planned receipt quantity and offsetting it to the left by the appropriate lead time. See: order release.

planned receipt–An anticipated receipt against an open purchase order or open production order. Syn.: planned order receipt.

planned start date–Syn.: scheduled start date.

planned value–In project management, the total value (including overhead) of approved estimates for planned activities.

planner–Syn.: material planner.

planner intervention–Syn.: manual rescheduling.

planner/buyer–Syn.: supplier scheduler.

planning–The process of setting goals for the organization and choosing various ways to use the organization's resources to achieve the goals.

planning and control process–A process consisting of the following steps: plan, execute, measure, and control.

planning and scheduling inventory training–Educating employees about best practices related to inventory control and inventory management.

planning bill–Syn.: planning bill of material (BOM).

planning bill of material (BOM)–An artificial grouping of items or events in bill-of-material format used to facilitate master scheduling and material planning. It may include the historical average of demand expressed as a percentage of total demand for all options within a feature or for a specific end-item within a product family. It is used as the quantity per in the planning BOM. Syn.: planning bill. See: hedge, option overplanning, production forecast, pseudo bill of material (BOM).

planning board–Syn.: control board.

planning calendar–Syn.: manufacturing calendar.

planning fence–Syn.: planning time fence.

planning horizon–The amount of time a plan extends into the future. For a master schedule, this is normally set to cover a minimum of cumulative lead time plus time for lot sizing low-level components and time for capacity changes of primary work centers or of key suppliers. For longer-term plans, the planning horizon must be long enough to permit any needed additions to capacity. See: cumulative lead time, planning time fence.

planning time fence–A point in time denoted in the planning horizon of the master scheduling process that marks a boundary inside of which changes to the schedule may adversely affect component schedules, capacity plans, customer deliveries, and cost. Outside the planning time fence, customer orders can be booked, and changes to the master schedule can be made within the constraints of the production plan. Changes inside the planning time fence must be made manually by the master scheduler. Syn.: planning fence. See: cumulative lead time, demand time fence (DTF), firm planned order (FPO), liquid zone, planned order, planning horizon, slushy zone, time fence.

planning values–Values that decision-makers use to translate the sales forecast into resource requirements to determine the feasibility and costs of alternative approaches.

planogram–A graph or map of allotted shelf space based on an analysis of sales data indicating the best arrangement of products on a store shelf.

plant finished goods–Finished goods inventory held in the plant rather than being shipped to a customer.

plant layout–Configuration of the plant site with lines, buildings, major facilities, work areas, aisles, and other pertinent data such as department boundaries.

plant rate–The total value added by a plant divided by the total direct labor hours in a particular time period. This percentage allows the scheduling at the rough-cut and capacity requirements level of the plan.

plant within a plant–Syn.: factory within a factory.

platform as a service (PaaS)–An environment for developers that provides access to the infrastructure and tools needed for developing, testing, and deploying cloud-based applications.

platform products–A grouping of products to share common parts, components, and characteristics (a common platform) so that design and production resources can be used to reduce cost and time to market.

PLC–Acronym for programmable logic controller.

PLCOR–Acronym for product life cycle operations reference.

pledging of accounts receivable–The act of securing a loan by pledging a company's accounts receivable (AR).

PLM–Acronym for product lifecycle management.

Plossl's law of lead time–The premise that lead times will be what it is said they are and would be better if it is said they were shorter. Shorter stated lead times lead to the slower release of new orders, allowing the plant to work off backlogs, thus shortening actual lead times.

PM–Acronym for preventive maintenance.

PMBOK®–Acronym for project management body of knowledge. It is a registered trademark of the Project Management Institute, Inc.

POD–Acronym for proof of delivery.

point of sale (POS)–The relief of inventory and computation of sales data at the time and place of sale, generally through the use of barcoding or magnetic media and equipment.

point reporting–The recording and reporting of milestone manufacturing order occurrences, typically done at checkpoint locations rather than by operations and easily controlled from a reporting standpoint.

point-of-purchase (POP) display–A sales promotion tool located at a checkout counter.

point-of-sale information–Information about customers collected at the time of sale.

point-of-use delivery–Direct delivery of material to a specified location on a plant floor near the operation in which it is to be used.

point-of-use inventory–Inventory placed in the production process near the operation in which it is to be used. See: dock-to-stock inventory.

point-of-use storage–Keeping inventory in specified locations on a plant floor near the operation in which it is to be used.

Poisson distribution–A type of statistical distribution frequently used to model the arrival of customers or entities into a queuing system.

poka-yoke–Mistake-proofing techniques, such as manufacturing or setup activity, designed in a way to prevent an error from resulting in a product defect. For example, in an assembly operation, if each correct part is not used, a sensing device detects that a part was unused and shuts down the operation, thereby preventing the assembler from moving the incomplete part to the next station or beginning another operation. This is sometimes spelled poke-yoke. Syns.: failsafe technique, failsafe work method, mistake-proofing.

POLCA–Acronym for paired-cell overlapping loops of cards with authorization.

policies–Definitive statements of what should be done in the business.

policy constraint–A common misnomer. Bad policies are not the constraint; rather, they hinder effective constraint management by inhibiting the ability to fully exploit and/or subordinate to the constraint.

political environment–External factors related to the political process—including laws and regulations and taxation codes—at the local, state, federal, and international levels of government.

pooling–1) In transportation, placing shipments from multiple companies together in the same shipment in order to reduce the costs of each shipment. 2) In production, that action that combines in parallel previously independent processes to reduce the total variance compared with the variances that would occur when the processes were independent.

POP–Acronym for point of purchase.

population–The entire set of items from which a sample is drawn.

POQ–Acronym for period order quantity.

portal–A multiservice website that provides access to data that may be secured by each user's role. Users can aggregate data and perform basic analysis. Portal ownership can be independent, private, or consortium-based. Business portals are often connected with a customer relationship management or supplier relationship management system. Portals can include structured data such as enterprise resource planning information, pictures, and documents. Unlike exchanges or marketplaces, portals generally can display and aggregate data without integration between application software.

portfolio–In project management, a collection of projects that are grouped to facilitate management. They are not necessarily interdependent.

portfolio analysis–The practice of segmenting sourcing into four categories so that the appropriate level of management attention and resources can be applied to the sourcing and procurement processes. The model is used to determine which suppliers are most appropriate for each of the four types of goods or services: (1) Commodity materials and services are of low strategic importance and low supply chain difficulty, (2) bottleneck materials and services are of low strategic importance but are of high supply chain difficulty, (3) leverageable materials and services have high strategic importance but low difficulty, and (4) direct or core competency materials and services are of high strategic importance and high difficulty.

portfolio life cycle planning–The ability to grow, sustain, and optimize product portfolios, including packaging and service, through measures of portfolio health such as product productivity; supporting launch and phase-out roadmaps; and alignment with commercialization plans, including brand and packaging plans. See: product life cycle operations reference (PLCOR), product lifecycle management (PLM).

POS–Acronym for point of sale.

positioning strategy–Within manufacturing, a plan for inventory, product design, and the production process.

possession utility–Product desirability created by marketing efforts.

post deduct–In a just-in-time (JIT) system, when work in process (WIP) materials used to build finished goods are relieved from inventory by multiplying the number of units completed by the number of parts in the bill of material (BOM). This is effective only if the BOM is accurate and manufacturing lead times are short. See: backflush.

post-deduct inventory transaction processing–Syn.: backflush.

postponement–A product design or supply chain strategy that deliberately delays final differentiation of a product (assembly, production, packaging, tagging, etc.) until the latest possible time in the process. This shifts product differentiation closer to the consumer to reduce the anticipatory risk of producing the wrong product. The practice reduces excess finished goods in the supply chain. Syn.: delayed differentiation.

post-release–The period after the product design has been released to manufacturing, during which the product has ongoing support and product enhancement.

post-transaction elements–Customer services that are provided after a product or service is sold, including warranties, returns, and complaint resolution.

potency–The measurement of active material in a specific lot, normally expressed in terms of an active unit. It is typically used for such materials as solutions.

PPAP–Acronym for production part approval process.

PPB–Acronym for part period balancing.

PPM–Acronym for project portfolio management.

PPP–Acronym for public-private partnering.

PPV–Acronym for purchase price variance.

practices–One of the four parts of the Supply Chain Operations Reference (SCOR) framework that contains management activities producing significantly better process performance.

precedence relationship–In the critical path method of project management, a logical relationship that one node has to the succeeding node. The terms precedence relationship, logical relationship, and dependency are used somewhat interchangeably.

predatory pricing–Lowering prices below cost to drive out competition and then raising prices again. In the United States, this is a violation of Article 2 of the Sherman Act.

predecessor activity–1) In project management, in an activity-on-arrow network (AOA), the activity that enters a node. 2) In project management, in an activity-on-node network (AON), the node at the tail of the arrow.

pre-deduct inventory transaction processing–A method of inventory bookkeeping in which the book (computer) inventory of components is reduced before issue and at the time a scheduled receipt for their parents or assemblies is created via a bill-of-material explosion. This approach has the disadvantage of a built-in differential between the book record and the amount of inventory physically in stock. See: backflush.

predetermined motion time–An organized body of information, procedures, techniques, and motion times employed in the study and evaluation of manual work elements. It is useful in categorizing and analyzing all motions into elements whose unit times are computed according to such factors as length, degree of muscle control, and precision. The element times provide the basis for calculating a time standard for the operations. Syn.: synthetic time standard.

predetermined time standards–A table of times of basic motions used to prepare artificial standards (i.e., without direct observation of a worker). See: therbligs.

predictable maintenance–Syn.: predictive maintenance.

prediction–An intuitive estimate of demand taking into account changes and new factors influencing the market, as opposed to a forecast, which is an objective projection of the past into the future.

predictive analytics–A method of extracting information from existing data analysis in order to identify patterns and predict future outcomes and trends. See: descriptive analytics, diagnostic analytics, prescriptive analytics.

predictive maintenance–A type of preventive maintenance based on nondestructive testing and statistical analysis that helps predict when required maintenance should be scheduled in order to prevent failures. Syn.: predictable maintenance.

pre-expediting–The function of following up on open orders before the scheduled delivery date to ensure the timely delivery of materials in the specified quantity.

preferred stock–A type of stock entitling the owner to dividends before common stockholders are entitled to them.

preferred supplier–The supplier of choice.

pre-issued return authorization–A return authorization number that is issued at the time of ordering or shipment of goods to the customer in order to reduce the time, cost, and possible errors associated with the process of receiving and validating a return authorization request.

prepaid–A term denoting that transportation charges have been or are to be paid at the point of shipment by the sender.

prepaid return shipping label–A return label that covers shipping costs that is provided to the customer at the time the order is sold and shipped. Instructions for how to return the item typically are included.

pre-receiving–Paying for materials before receipt to prepare for incoming products and goods.

prerelease–The period of product specification, design, and design review.

prerequisite tree (PRT)–A necessity-based logic diagram that facilitates answering the third question in the change sequence: How do we effect the change? The diagram shows the relationship between the injections, desirable effects or ambitious target and the obstacles that block the implementation of the injections. It also includes the intermediate objectives required to overcome the obstacles and shows the sequence in which they must be achieved for successful implementation.

prescriptive analytics–Analytics that use descriptive and predictive models to recommend decisions and suggest courses of action by revealing the potential effects and risks. See: descriptive analytics, diagnostic analytics, predictive analytics.

present value–The value today of future cash flows. For example, the promise of $10 a year from now is worth something less than $10 in hand today. See: discount rate, discounted cash flow.

pre-transaction elements–Customer service elements that pertain to the period before a product or service is sold, including flexibility, customer policies, and mission statement.

prevention costs–The costs caused by improvement activities that focus on the reduction of failure and appraisal costs. Typical costs include education, quality training, and supplier certification. Prevention costs are one of four categories of quality costs.

prevention versus detection–A term used to contrast two types of quality activities. Prevention refers to those activities designed to prevent nonconformances in goods and services. Detection refers to those activities designed to detect nonconformances already in goods and services.

preventive maintenance (PM)–The regularly scheduled activities, including adjustments, replacements, and basic cleanliness, that are done to prevent machine breakdowns. The purpose is to ensure that production quality is maintained and that delivery schedules are met. Syn.: periodic maintenance.

preventive returns–The practice of issuing notices to consumers and customers requesting the return of goods or materials due to possible product defects or damage.

price–One of the four Ps (product, price, place, and promotion) that constitute the set of tools used to direct the business offering to the customer. Price is the amount charged for the product offering. The price set must take into account competition, substitute products, and internal business costs to return a desirable product margin. See: four Ps.

price analysis–The examination of whether or not the price paid or proposed for goods and services is fair. The testing involves comparing the price against reasonable comparators, such as prices that have been paid in the past, published prices, pricing formulas, and competitive bidding comparisons.

price break–A discount given for paying early, buying in quantity, and so forth. See: cash discount, quantity discount, volume discount.

price discrimination–Selling the same products to different buyers at different prices.

price elasticity–The degree of change in buyer demand in response to changes in product price. It is calculated by dividing the percentage of change in quantity bought by the percentage of change in price. Prices are considered elastic if demand varies with changes in price. If demand changes only slightly when the price changes, demand is said to be inelastic. For example, demand for most medical services is relatively inelastic, but demand for automobiles is generally elastic.

price erosion–Occurs when increased competition and efficiencies in production over time cause the price to gradually reduce.

price point–The relative price position at which the product will enter the market compared with direct and indirect competitors' prices. It is considered within the context of the price-range options available: high, medium, or low.

price prevailing at date of shipment–An agreement between a purchaser and a supplier that the price of the goods ordered is subject to change at the supplier's discretion between the date the order is placed and the date the supplier makes shipment. The subsequently established price is the contract price.

price protection–An agreement between a supplier and a purchaser to grant the purchaser any reduction in price that the supplier may establish on its goods before shipment of the purchaser's order or to grant the purchaser the lower price should the price increase before shipment. Price protection is sometimes extended for an additional period beyond the date of shipment.

price schedule–The list of prices applying to varying quantities or kinds of goods.

price skimming–Introducing a product above its long-run price to maximize product margin before others can enter the market.

price to earnings (PE) ratio–The current price of a stock relative to its earnings per share.

price-break model–Syn.: quantity discount model.

prima facie–Latin for at first sight or on the face of it. It is used to refer to something that is presumed to be true.

primary demand–The demand for a category of products rather than for a specific brand.

primary location–The designation of a certain storage location as the standard, preferred location for an item.

primary operation–A manufacturing step normally performed as part of a manufacturing part's routing. Ant.: alternate operation.

primary process–A process that performs the main value-added activities of an organization.

primary work center–The work center where an operation on a manufactured part is normally scheduled to be performed. Ant.: alternate work center.

prime costs–Direct costs of material and labor. Prime costs do not include general, sales, or administrative costs.

prime operations–Critical or most significant operations whose production rates must be closely planned.

prime rate–The interest rate charged by banks to their most preferred customers.

principal–The party authorizing an agent to act on his or her behalf.

principles of material flow–Seven principles that ensure that material flow through a warehouse is efficient, safe, environmentally sustainable, and profitable.

prioritization matrix–A special type of matrix chart used to show the priorities of items by applying criteria and weighting factors to each item.

priority–In a general sense, the relative importance of jobs (i.e., the sequence in which jobs should be worked on). It is a separate concept from capacity.

priority control–The process of communicating start and completion dates to manufacturing departments in order to execute a plan. The dispatch list is the tool normally used to provide these dates and priorities based on the current plan and status of all open orders.

priority planning–The function of determining what material is needed and when. Master production scheduling and material requirements planning (MRP) are the elements used for the planning and replanning processes to maintain proper due dates on required materials.

priority report–Syn.: dispatch list.

priority rules–Simple heuristics used to select the order in which jobs will be processed.

private blockchain–A cloud environment dedicated to a single customer, hosted at the customer's location or a provider's data center. It is sometimes referred to as a single-tenant cloud. See: public blockchain.

private brand–A brand applied by a distributor rather than a manufacturer.

private carrier–A group that provides transportation exclusively within an organization. Ants.: common carrier, for-hire carrier.

private cloud–A cloud environment dedicated to a single customer, hosted at the customer's location or a provider's data center. It is sometimes referred to as a single-tenant cloud. See: cloud computing, public cloud.

private key–In information systems, an encryption key that is known only by the sender and receiver of the message. See: public key.

private label–Also known as store or dealer brands, these are products that are designed and produced by one company but carry the name of the store that sells them. These products also can be referred to as generic.

private ownership–A form of business ownership in which the business is either owned by a single person (proprietorship) or organized under law as a separate legal entity but for which company stock is not publicly traded. See: partnership, public ownership.

private trading exchange (PTX)–A trade exchange hosted by a single company to facilitate collaborative e-commerce with its trading partners. As opposed to public e-marketplaces, a private exchange provides the host company with control over many factors, including who may participate (and in what manner), how participants may be connected, and what contents should be presented (and to whom). The ultimate goal might be to improve supply chain efficiencies and responsiveness through improved process visibility and collaboration, advanced integration platforms, and customization capabilities. See: independent trading exchange.

private warehouse–A company-owned warehouse.

pro forma financial statements–Financial statements that are based on an assumed scenario rather than an actual experience.

pro forma invoice–A quote provided by a seller or exporter prior to the delivery of products or services, informing the buyer or importer of the quantity and price. This document is submitted to customs for valuation purposes.

proactive–A strategy of anticipating issues and presenting beneficial solutions to the customer.

probabilistic demand models–Statistical procedures that represent the uncertainty of demand by a set of possible outcomes (i.e., a probability distribution) and that suggest inventory management strategies under probabilistic demands.

probability–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.

probability and impact matrix–A matrix combining two dimensions of risk: (1) the likelihood of an event's occurrence and (2) the impact if the event occurs.

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

probability tree–A graphic display of all possible outcomes of an event based on the possible occurrences and their associated probabilities.

probable scheduling–A variant of scheduling that considers slack time to increase or decrease the calculated lead time of an order. Interoperation and administrative lead time components are expanded or compressed by a uniform stretching factor until no difference exists between the schedule of operations obtained by forward and backward scheduling. See: lead time scheduling.

problem-solving storyboard–A technique based on the plan-do-check-action (PDCA) problem-solving process. The steps being taken and the progress toward the resolution of a problem are continuously planned and updated.

procedure manual–A formal organization and indexing of a firm's procedures. Manuals are usually printed and distributed to the appropriate functional areas.

process–1) A planned series of actions or operations (e.g., mechanical, electrical, chemical, inspection, or test) that advances a material or procedure from one stage of completion to another. 2) A planned and controlled treatment that subjects materials or procedures to the influence of one or more types of energy (e.g., human, mechanical, electrical, chemical, or thermal) for the time required to bring about the desired reactions or results.

process and metrics alignment–The organized and deliberate development of metrics across an organization. The process starts with developing organizational, business, or supply chain metrics and then moves to developing metrics for organizational processes and more specific levels, if desired.

process average–Expected value of the percentage defective of a given manufacturing process.

process batch–The quantity or volume of output that is to be completed at a workstation before switching to a different type of work or changing an equipment setup.

process benchmarking–Benchmarking focused on the target firm's business processes (including process flows, operating systems, and process technologies). See: benchmarking.

process capability–The ability of the process to produce parts that conform to (engineering) specifications. Process capability relates to the inherent variability of a process that is in a state of statistical control. See: Cp, Cpk, process capability analysis.

process capability analysis–A procedure to estimate the parameters defining a process. The mean and standard deviation of the process are estimated and compared with the specifications, if known. This comparison is the basis for calculating capability indexes. In addition, the form of the relative frequency distribution of the characteristic of interest may be estimated. Syn.: capability study. See: process capability.

process capability index–The value of the tolerance specified for the characteristic divided by the process capability. There are several types of process capability indices, including the widely used Cpk and Cp.

process chart–A chart that represents the sequence of work or the nature of events in process. It serves as a basis for examining and possibly improving the way the work is carried out. See: flow process chart, process flow.

process control–1) The function of maintaining a process within a given range of capability by feedback, correction, and so forth. 2) The monitoring of instrumentation attached to equipment (valves, meters, mixers, liquid, temperature, time, etc.) from a control room to ensure that a high-quality product is being produced to specification.

process control chart–Syn.: control chart.

process controllers–Computers designed to monitor the manufacturing cycle during production, often with the capability to modify conditions in order to bring the production back to within prescribed ranges.

process costing–A cost accounting system in which the costs are collected by time period and averaged over all the units produced during the period. This system can be used with either actual or standard costs in the manufacture of a large number of identical units.

process decision program chart–A technique used to show alternate paths to achieving given goals. Applications include preparing contingency plans and maintaining project schedules.

process design–The design of the manufacturing method.

process engineering–The discipline of designing and improving the manufacturing equipment and production process to support the manufacture of a product line. See: manufacturing engineering.

process flexibility–The design of the manufacturing system, including operators and machinery, that allows quick changeovers to respond to near-term changes in product volume and mix. It is a necessary tool in lean and just in time.

process flow–The sequence of activities that, when followed, results in a product or service deliverable. See: flow process chart, process chart.

process flow analysis–A procedure to evaluate the effectiveness of a sequence of business activities. The analysis determines which elements of the flow are value-added and eliminates those that are not, determines which parts of the process can be automated, evaluates activities as to whether they contribute to the core competencies of the business or are candidates for outsourcing, and designs a structure for the remaining activities of the process to improve productivity.

process flow diagram–A graphical and progressive representation of the various steps, events, and tasks that make up an operations process. It provides the viewer with a picture of what actually occurs when a product is manufactured or a service is performed.

process flow production–A production approach with minimal interruptions in the actual processing in any one production run or between production runs of similar products. Queue time is virtually eliminated by integrating the movement of the product into the actual operation of the resource performing the work.

process flow scheduling–A generalized method for planning equipment usage and material requirements that uses the process structure to guide scheduling calculations. It is used in the flow environments common in process industries.

process flowchart–Syn.: flow process chart.

process focused–A type of manufacturing organization in which both plant and staff management responsibilities are delineated by the production process. A highly centralized staff coordinates plant activities and intracompany material movements. This type of organization is best suited to companies whose dominant orientation is to a technology or material and whose manufacturing processes tend to be complex and capital-intensive. See: product focused, process-focused organization.

process hours–The time required to perform any specific operation or task needed to process the product.

process improvement–The activities designed to identify and eliminate causes of poor quality, process variation, and non-value-added activities.

process industries–Manufacturers that produce products by mixing, separating, forming, and/or performing chemical reactions. Paint manufacturers, refineries, and breweries are examples of process industries.

process integration–Coordinating operations and consolidating data to simplify processes and increase efficiency.

process layout–Syn.: functional layout.

process list–A list of operations and procedures in the manufacture of a product. It may also include a statement of material requirements.

process manufacturing–Production that adds value by mixing, separating, forming, and/or performing chemical reactions. It may be done in either batch or continuous mode. See: project manufacturing.

process map–A diagram of the flow of a production process or service process through the production system. Standardized symbols are used to designate processing, flow directions, branching decisions, input/output, and other aspects of the process.

process mapping–Drawing the processes or relationships that form an organization's business processes.

process organization structure–An organizational structure in which people are removed from their functional departments and placed into a group that works as a single unit to perform the entire linked process, as opposed to a functional organization in which the activities that make up the process are performed by people in multiple functionally oriented departments.

process oriented–An environment in which the focus is on the interrelated processes in a business. It includes the activities to transform inputs into outputs that have value.

process planning–Determining the technological steps and sequence required to produce a product or service at the required quality level and cost.

process selection–An economic analysis used to decide which process should be used when operations can be performed by more than one process.

process sheet–Detailed manufacturing instructions issued to the plant. The instructions may include specifications on speeds, feed, temperatures, tools, fixtures, and machines and sketches of setups and semifinished dimensions.

process steps–The operations or stages within the manufacturing cycle required to transform components into intermediates or finished goods. From a larger perspective, the operations or stages within any business required to turn inputs into outputs.

process stocks–Raw ingredients or intermediates available for further processing into marketable products.

process time–The time during which the material is being changed, whether through a machining operation or an assembly. Syn.: residence time.

process train–A representation of the flow of materials through a process industry manufacturing system that shows equipment and inventories. Equipment that performs a basic manufacturing step, such as mixing or packaging, is called a process unit. Process units are combined into stages, and stages are combined into process trains. Inventories decouple the scheduling of sequential stages within a process train.

process yield–See: yield.

process-focused organization–An organization that is oriented toward executing linked activities that constitute a given end-to-end business process with a given set of resources. Responsibilities of the members of the organization are oriented toward the performance of the process that creates the product or service and not toward a product or functional silo. See: process focused, product focused.

process-focused production–A type of factory operation that requires frequent machine changeover and produces small batches of unique products that flow along different paths.

processor-dominated scheduling–A technique that schedules equipment (processor) before materials. This facilitates scheduling equipment in economic run lengths and the use of low-cost production sequences. Processor-dominated scheduling is used in some process industries. See: material-dominated scheduling (MDS).

procure to pay cycle–The activities and processes that take place from the time a purchase order is placed until payment is made.

procurement–The business functions of procurement planning, purchasing, inventory control, traffic, receiving, incoming inspection, and salvage operations.

procurement card (p-card)–A purchasing card similar to a personal credit card for authorized employees to make low-volume, inexpensive purchases. The card user makes these limited buying decisions, bypassing the purchasing department altogether. Syn.: corporate purchasing cards, procurement credit card.

procurement credit card–Credit cards with a predetermined credit limit issued to buyers. Syn.: corporate purchasing cards.

procurement cycle–Syn.: procurement lead time.

procurement governance–The established procurement policies and procedures, values and ethical standards, performance management, board accountability to procurement integrity, whistle blowers' protection, fraud detection, reporting line and authority for the department, and internal and external audit procedures. These policies also include ways to prevent conflicts of interest and the adherence to the code of conduct for the procurement department to maintain the highest ethical standards. In addition, it can include establishing fair competition practices in the procurement process, assuring non-disclosure of information, and abolishing unethical standards in procurement and supply.

procurement lead time–The time required to design a product, modify or design equipment, conduct market research, and obtain all necessary materials. Lead time begins when a decision has been made to accept an order to produce a new product and ends when production commences. Syns.: procurement cycle, total procurement lead time. See: time-to-market.

procurement services provider–A company that has product, sourcing, and supply management knowledge; acts as an outsourced process by other companies; and provides procurement help. This is most often used as a third-party process by companies in which procurement is a significant part of business but the company lacks the expertise to effectively manage the process.

producer–One who creates a good or service.

producer market–Syn.: industrial market.

producer's risk (α)–For a given sampling plan, the probability of not accepting a lot, the quality of which has a designated numerical value representing a level that is generally desired to accept. Usually the designated value will be the acceptable quality level (AQL). See: type I error.

produce-to-stock–Syn.: make-to-stock (MTS).

producibility–The characteristics of a design that enable the item to be produced and inspected in the quantity required at the least cost and minimum time.

product–1) Any good or service produced for sale, barter, or internal use. 2) One of the four Ps (product, price, place, and promotion) that constitute the set of tools for directing the business offering to the customer. The product can be promoted as a distinctive item. See: four Ps.

product and market focus–Developing products based on dimensions like service to similar customers, volume, or customization.

product and portfolio management–An operating model and framework for end-to-end product or service life cycle management in an organization. The objective is to optimize the ideas, product portfolios, and profitability by interlocking them with future product plans and end-of-life procedures.

product assortment–Syn.: product mix.

product audit–The reinspection of any product to verify the adequacy of acceptance or rejection decisions made by inspection and testing personnel.

product benchmarking–Benchmarking used for new product design or for a product upgrade. This often includes reverse engineering (dismantling) competing products to determine their strengths and weaknesses. See: benchmarking.

product configuration catalog–A listing of all upper-level configurations contained in an end-item product family. Its application is most useful when there are multiple end-item configurations in the same product family. This catalog is used to provide a transition linkage between the end-item level and a two-level master production schedule (MPS). It also provides a correlation between the various units of upper level product definition.

product configurator–A system, generally rule-based, to be used in design-to-order (DTO), engineer-to-order (ETO), or make-to-order (MTO) environments where numerous product variations exist. Product configurators perform intelligent modeling of the part or product attributes and often create solid models, drawings, bills of material, and cost estimates that can be integrated into CAD/CAM and manufacturing resource planning systems as well as sales order entry systems.

product cost–Cost allocated by some method to the products being produced. Initially recorded in asset (inventory) accounts, product costs become an expense (cost of sales) when the product is sold.

product data management (PDM)–A system that tracks the configurations of parts and bills of material and also the revisions and history of product designs. It facilities the design release, distributes the design data to multiple manufacturing sites, and manages changes to the design in a closed-loop fashion. It provides the infrastructure that controls the design cycle and manages change.

product design influencing–The simultaneous participation of procurement and other stakeholders, such as suppliers and customers, in the product-design activity. The intent of the process is to influence the design with the inputs of the procurement department and suppliers to ensure that the final design meets the needs of all stakeholders. The participation results in products being brought to market more quickly while maximizing quality and minimizing costs.

product development–Developing and managing products and services that are responsive to customer experience in a manner that results in improved market timeliness, higher design quality, increased productivity, and enhanced communication and visibility.

product development collaboration–The ability to collaborate beyond an organization's conventional internal boundaries and integrate product strategy and development processes across internal and external stakeholders for faster product or service development cycles. This collaboration reduces time to market and provides the opportunity to exceed customer expectations.

product development, engineering, and disposition collaboration–The practice of product development and engineering teams working with the permission-granting authority to ensure the authority is aware of key decisions to ensure the authority can update technical documentation, the configuration management system, and product specifications as needed.

product differentiation–A strategy of making a product distinct from the competition on a nonprice basis such as availability, durability, quality, or reliability.

product diversification–A marketing strategy that seeks to develop new products to supply current markets.

product engineering–The discipline of designing a product or product line to take advantage of process technology and improve quality, reliability, and so forth.

product family–A group of products or services that pass through similar processing steps, have similar characteristics, and share common equipment prior to shipment or delivery to the customer. A product family can be from different overlapping product lines that are produced in one factory. This classification is often used in production planning (or sales and operations planning (S&OP)). See: product line.

product flexibility–The ease with which current designs can be modified in response to changing market demands.

product focused–A type of manufacturing organization in which both plant and staff responsibilities are delineated by product, product line, or market segment. Management authority is highly decentralized, which tends to make the company more responsive to market needs and more flexible when introducing new products. This type of organization is best suited to companies whose dominant orientation is to a market or consumer group and where flexibility and innovation are more important than coordinated planning and tight control. See: process focused, process-focused organization.

product genealogy–A record, usually on a computer file, of the history of a product from its introduction into the production process through its termination. The record includes lot or batch sizes used, operations performed, inspection history, options, and where-used information.

product grade–The categorization of goods based upon the range of specifications met during the manufacturing process.

product group–Syn.: product line.

product group forecast–A forecast for a number of similar products. See: aggregate forecast, product group.

product layout–Another name for flow process layout. Product layout is a system that is set up for a limited range of similar products. Focused-factory production is also considered to be in this category. See: flow processing, focused factory.

product life cycle–The stages a new product goes through from beginning to end, from initial research and development, through growth and maturity, to decline and phase-out. See: life cycle analysis.

product lifecycle management (PLM)–The process of facilitating the development, use, and support of products that customers want and need. It helps professionals envision the creation and preservation of product information, both to the customer and along the reverse-logistics portion of the supply chain.

product life cycle operations reference (PLCOR)–A reference model for innovation, product, and portfolio management. It spans all product life cycle activities, from the first idea to broad adoption in the mass market. PLCOR is applicable to the life cycles of both products and service offerings.

product line–A group of products associated by function, consumer group, distribution channel, manufacturing characteristics, or price range. The grouping typically reflects the marketing and sales aspects of a product or service (similar in customer needs) and is used in aggregate planning, marketing, costing, and sales planning. See: product family, product group.

product load profile–A listing of the required capacity and key resources needed to manufacture one unit of a selected item or family. The resource requirements are further defined by a lead time offset to predict the impact of the product on the load of the key resources by specific time period. The product load profile can be used for rough-cut capacity planning (RCCP) to calculate the approximate capacity requirements of the master production schedule (MPS). See: bill of resources, resource profile, rough-cut capacity planning (RCCP).

product manager–Syn.: brand manager.

product manager concept–A marketing method in which a manager is given complete responsibility for managing the introduction, stocking policy, marketing, and sales of a specific product.

product mix–The total collection of product lines and individual varieties a firm offers to the market. Changes in the product mix can require significant changes in the manufacturing environments for certain types of labor and material. Syn.: product assortment.

product mix forecast–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.

product number–Syn.: item number.

product or service liability–The obligation a company bears for loss related to personal injury, property damage, or other harm caused by its goods or services.

product positioning–The marketing effort involved in placing a product in a market to serve a particular niche or function. Syn.: service positioning.

product profiling–1) A graphical device used to ascertain the level of fit between a manufacturing process and the order-winning criteria of its products. It can be used at the process or company level to compare the manufacturing capabilities with the market requirements to determine areas of mismatch and identify steps needed for realignment. 2) Removing material around a predetermined boundary by means of numerically controlled machining. The numerically controlled tool path is automatically generated on the system.

product quality–An attribute that reflects the capability of a product to satisfy customers' needs.

product road map–A plan that communicates the product portfolio of offerings and product life cycles over time. The product road map serves to detail product offerings, product manufacturing, and execution plans, and it should tie to customer expectations and marketing plans.

product segments–1) The shared information between a plan-of-resources and a production rule for a specific product. 2) A logical grouping of personnel resources, equipment resources, and material specifications required to carry out the production step.

product specification–A statement of acceptable physical, electrical, and/or chemical properties or an acceptable range of properties that distinguish one product or grade from another.

product structure–The sequence of operations that components follow during their manufacture into a product. A typical product structure shows raw material converted into fabricated components, components put together to make subassemblies, subassemblies going into assemblies, and so forth.

product structure record–A computer record defining the relationship of one component to its immediate parent and containing fields for quantity required, engineering effectivity, scrap factor, application selection switches, and so forth.

product tree–A graphical (or tree) representation of the bill of material (BOM).

product velocity–Units sold per period.

product/service hierarchy–In sales and operations planning (S&OP), a general approach to dividing products or services into families, brands, and subfamilies for various planning levels. This ensures that a correct top-down or bottom-up approach is taken to grouping (or aggregating) demand at each subsequent level. Forecasts are more accurate the higher up the product hierarchy they are developed; consequently, forecasts should usually be driven down from the top.

product-based layout–A type of layout in which resources are arranged sequentially according to the steps required to make a particular complex product.

product-focused production–A type of operation designed to process only a few different products, which are usually produced for inventory. Production rates tend to be greater than the demand rate.

production–The conversion of inputs into finished products.

production activity control (PAC)–The function of routing and dispatching the work to be accomplished through the production facility and of performing supplier control. PAC encompasses the principles, approaches, and techniques needed to schedule, control, measure, and evaluate the effectiveness of production operations. See: shop floor control.

production and inventory management–General term referring to the body of knowledge and activities concerned with planning and controlling rates of purchasing, production, distribution, and related capacity resources to achieve target levels of customer service; backlogs; operating costs; inventory investment; manufacturing efficiency; and ultimately, profit and return on investment.

production and operations management (POM)–1) Managing an organization's production of goods or services. 2) Managing the process of taking inputs and creating outputs.

production calendar–Syn.: manufacturing calendar.

production capability–1) The highest sustainable output rate that could be achieved for a given product mix, raw materials, worker effort, plant, and equipment. 2) The collection of personnel, equipment, material, and process segment capabilities. 3) The total of the current committed, available, and unattainable capability of the production facility. The capability includes the capacity of the resource.

production card–In a just-in-time (JIT) context, a card or other signal for indicating that items should be made for use or that some items removed from pipeline stock should be replaced. See: kanban.

production control–The function of directing or regulating the movement of goods through the entire manufacturing cycle from the requisitioning of raw material to the delivery of the finished products.

production cycle–Syn.: manufacturing lead time.

production cycle element–An element of manufacturing strategy that defines the span of an operation by addressing the following areas: (1) the established boundaries for the firm's activities; (2) the construction of supply chain relationships outside the firm's boundaries; (3) circumstances under which changes in established boundaries or relationships are necessary; and (4) the effect of such boundary or relationship changes on the firm's competitive position. See: manufacturing strategy.

production environment–Syn.: manufacturing environment.

production forecast–A projected level of customer demand for a feature (option, accessory, etc.) of a make-to-order (MTO) or an assemble-to-order (ATO) product. Used in two-level master scheduling, it is calculated by netting customer backlog against an overall family or product line master production schedule (MPS) and then factoring this product's available-to-promise (ATP) by the option percentage in a planning bill of material (BOM). See: assemble-to-order (ATO), planning bill of material (BOM), two-level master schedule.

production kanban–A signal, usually a card, used to trigger the production of a part.

production lead time–Syn.: manufacturing lead time.

production level–Syn.: production rate.

production leveling–Syn.: level production method.

production line–A series of pieces of equipment dedicated to the manufacture of a specific number of products or families.

production line sequencing–Ordering, shipping, receiving, and staging materials in the same sequence they will be used.

production lot–A group of materials that is processed in one stage of production and put in inventory for further production (or for shipment to customers).

production management–1) The planning, scheduling, execution, and control of the process of converting inputs into finished goods. 2) A field of study that focuses on the effective planning, scheduling, use, and control of a manufacturing organization. It examines concepts from design engineering, industrial engineering, management information systems, quality management, inventory management, accounting, and other functions to determine how they affect the transformation process.

production material–Any material used in the manufacturing process.

production materials requisition–Syn.: material requisition.

production network–The complete set of all work centers, processes, and inventory points, from raw materials sequentially to finished products and product families. It represents the logical system that provides the framework to attain the strategic objectives of the firm based on its resources and the products' volumes and processes. It also provides the general sequential flow and capacity requirement relationships among raw materials, parts, resources, and product families.

production order–Syn.: manufacturing order.

production part approval process (PPAP)–A Big Three automotive process outlining requirements for approval of production parts. Its purpose is to measure whether a supplier can, with regularity, fulfill these requirements.

production plan–The agreed-upon plan that comes from the production planning (sales and operations planning (S&OP)) process, which provides the overall level of planned manufacturing output, usually stated as a monthly rate for each product family. The plan represents management's authorization for the master scheduler to convert it into the more detailed master production schedule (MPS). See: sales plan.

production planning–A process to develop tactical plans based on setting the overall level of manufacturing output (production plan) and other activities to best satisfy the current planned levels of sales (sales plan or forecasts), while meeting general business objectives of profitability, productivity, competitive customer lead times, etc., as expressed in the overall business plan.

The sales and production capabilities are compared, and a business strategy that includes a sales plan, a production plan, budgets, pro forma financial statements, supporting plans for materials and workforce requirements, and so on, is developed. A primary purpose is to establish production rates that will achieve management's objective of satisfying customer demand by maintaining, raising, or lowering inventories or backlogs, while usually attempting to keep the workforce relatively stable.

Because this plan affects many company functions, it is normally prepared with information from marketing and coordinated with the functions of manufacturing, sales, engineering, finance, human resources, etc. See: aggregate planning, production plan, sales and operations planning (S&OP), sales plan.

production planning and control strategy–An element of manufacturing strategy that includes the design and development of manufacturing planning and control (MPC) systems in relation to the following considerations: (1) market-related criteria—the required level of delivery speed and reliability in a given market segment; (2) process requirement criteria—consistency between process type and the production planning and control system; and (3) organization control levels—systems for providing long-term planning and short-term control capabilities for strategic and operational considerations by management. See: manufacturing strategy.

production planning methods–The approach taken in setting the overall manufacturing output to meet customer demand by setting production levels, inventory levels, and backlog. Companies can use a chase, level, or hybrid production planning method. See: chase production method, hybrid production method, level production method.

production process–The activities involved in converting inputs into finished goods. See: manufacturing process, transformation process.

production rate–The rate of production usually expressed in units, cases, or some other broad measure, expressed by a period of time (e.g., per hour, shift, day, or week). Syn.: production level.

production release–Syn.: manufacturing order.

production report–A statement of the output of a production facility for a specified period. The information normally includes the type and quantity of output; workers' efficiencies; departmental efficiencies; costs of direct labor, direct material, and the like; overtime worked; and machine downtime.

production reporting–A process for providing feedback to the production schedule and allow for corrective action and maintenance of valid on-hand and on-order balances. It normally includes manufacturing order authorization, release, acceptance, operation start, delay reporting, move reporting, scrap and rework reporting, order close-out, and payroll interface. Syns.: manufacturing order reporting, shop order reporting.

production schedule–A plan that authorizes the factory to manufacture a certain quantity of a specific item. It is usually initiated by the production planning department.

production scheduling–The process of developing the production schedule.

production sharing–A network of companies that participates in product design, production, marketing, distribution, and service.

production standard–A time standard to produce piece parts and assemblies.

production system–A system that accepts inputs and converts them to the desired outputs.

production time–Setup time plus total processing time, where total processing time is processing time per piece multiplied by the number of pieces.

production validation–Demonstrating that a production process will consistently lead to the expected results.

productive capacity–In theory of constraints, the maximum of the output capabilities of a resource (or series of resources) or the market demand for that output for a given time period. See: excess capacity, idle capacity, protective capacity.

productive inventory–In theory of constraints, the inventory required to meet production requirements without allowance for unplanned delays. See: idle inventory, protective inventory.

productivity–1) An overall measure of the ability to produce a good or a service. It is the actual output of production compared with the actual input of resources. Productivity is a relative measure across time or against common entities (labor, capital, etc.). In the production literature, attempts have been made to define total productivity where the effects of labor and capital are combined and divided into the output. One example is a ratio that is calculated by adding the dollar value of labor, capital equipment, energy, and material, and so forth and dividing it into the dollar value of output in a given time period. This is one measure of total factor productivity. See: efficiency, labor productivity, machine productivity, utilization. 2) In economics, the ratio of output in terms of dollars of sales to an input such as direct labor in terms of the total wages. This is also known as single-factor productivity or partial-factor productivity.

product-market-focused organization–A firm in which individual plants are dedicated to manufacturing a specific product or product group.

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

product-positioned strategy–Locating operations close to the sources of supply. See: market-positioned strategy.

product-positioned warehouse–A warehouse located close to the manufacturing plants that acts as a consolidation point for products.

profit–See: gross profit, net profit, operating profit.

profit center–An assigned responsibility center that has the authority to affect both the revenues earned and the costs incurred by and allocated to the center. Operational effectiveness is evaluated in terms of the amount of profit generated.

profit margin–1) The difference between the sales and cost of goods sold (COGS) for an organization, sometimes expressed as a percentage of sales. 2) In traditional accounting, the product selling price minus the direct material, direct labor, and allocated overhead for the product, sometimes expressed as a percentage of selling price.

profit ratio–Profit divided by sales.

profit sharing–A plan by which employees receive compensation above their normal wages based on company profitability. The purpose is to motivate employees and recognize their efforts.

profitability–A measure of the excess income over expenditure during a given period of time.

profitability analysis–In activity-based cost accounting, the examination of profit received from cost objects to attempt to optimize profitability. A variety of views may be examined, including customer, distribution channel, product, and regions.

profitability index–In financial management, the net present value of a projected stream of income from a project (potential investment) divided by the investment in the project. It is used to select among competing potential investments.

profitability ratio–An indicator of whether or not a company is generating profits at an acceptable rate. It includes such measurements as return on total assets, return on equity, and profit margin.

profound knowledge–A quality-related concept created by W. Edwards Deming. The four aspects of profound knowledge are appreciation of a system, knowledge about variation, theory of knowledge, and psychology.

program–In project management, a coordinated set of related projects, usually including ongoing work.

program directive–A report by the program manager to inform supporting departments concerning an active or planned program or project.

program evaluation and review technique (PERT)–In project management, a network analysis technique in which each activity is assigned a pessimistic, most likely, and optimistic estimate of its duration. The critical path method is then applied using a weighted average of these times for each node. PERT computes a standard deviation of the estimate of project duration. See: critical path method (CPM), graphical evaluation and review technique (GERT), network analysis.

program management–The activities involved in the realization of a product or service offered to customers. Responsibilities include planning, directing, and controlling one or more projects of a new or continuing nature; initiating any acquisition processes necessary to get the project work under way; and monitoring performance. See: program manager.

program manager–A person assigned program management responsibilities for the implementation activities associated with a new or ongoing product or service offering to customers. See: program management.

programmable logic controller (PLC)–An electronic device that is programmed to test the state of input process data and to set output lines in accordance with the input state, thus providing control instructions or branching to another set of tests. Programmable controllers provide factory floor operations with the ability to monitor and rapidly control hundreds of parameters, such as temperature and pressure.

progress payment–The practice of paying suppliers based on predefined milestones and progress. These partial payments can be made upon completion of predefined stages of work or based upon a pre-determined amount or percentage of the overall price.

progressive operations–Passing work from station to station.

project–An endeavor with a specific objective to be met within predetermined time and dollar limitations and that has been assigned for definition or execution. See: project manufacturing, project management.

project calendar–A calendar of working days and nonworking days that shows when scheduled activities are idle. Typically, it includes holidays and weekends. See: resource calendar.

project costing–An accounting method of assigning valuations generally used in industries where services are performed on a project basis. Each assignment is unique and costed without regard to other assignments. Examples are shipbuilding, construction projects, and public accounting firms. Project costing is different from process costing, in which the products to be valued are homogeneous.

project duration–The elapsed duration from project start date through the project finish date.

project life cycle–In project management, a set of project phases (objectives definition, requirements definition, external and internal design, construction, system test, and implementation and maintenance), whose definition is determined by the needs of those controlling the project.

project management–The use of skills and knowledge in coordinating the organizing, planning, scheduling, directing, controlling, monitoring, and evaluating of prescribed activities to ensure that the stated objectives of a project, manufactured good, or service are achieved. See: project.

Project Management Body of Knowledge (PMBOK®)–All the knowledge within the project management profession, including all published and unpublished material, knowledge that rests with practitioners and academics, and practices that range from traditional to innovative.

project management team–In project management, the personnel assigned to a project who are directly involved in management activities.

project manufacturing–A type of manufacturing process used for large, often unique, items or structures that require a custom design capability (engineer-to-order (ETO)). This type of process is highly flexible and can cope with a broad range of product designs and design changes. This process usually uses a fixed-position type layout. See: batch (fourth definition), continuous production, fixed-position manufacturing, job shop (second definition), process manufacturing, project, repetitive manufacturing.

project model–A time-phased project planning and control tool that itemizes major milestones and points of user approval.

project network–A diagram showing the technological relationships among activities in a project.

project phase–In project management, a set of related project activities that usually go together to define a project deliverable.

project plan–In project management, a document that has been approved by upper management for use in executing and controlling a project. It documents assumptions, facilitates communication, and documents the approved budget and schedule. A project plan may exist at a summary or a detailed level.

project portfolio management (PPM)–A process in which an organization's projects are evaluated to ensure strategic alignment with the company's goals, and to understand the benefits and risks of a potential project.

project production–Production in which each unit or small group of units is managed by a project team created especially for that purpose.

project risk management–In project management, a systematic process of controlling project risk. It includes maximizing the likelihood and effect of positive events and minimizing the likelihood and effect of negative events.

project schedule–In project management, a list of activities and their planned completion dates that collectively achieve project milestones.

project scope–In project management, the work required to create a product with given features and options.

project summary work breakdown structure–A work breakdown structure that is developed down to the subproject level of detail. See: work breakdown structure.

project team–An inclusive term incorporating the workers assigned to the project, the project managers, and sometimes the project sponsor.

project team directory–A list of team member names, roles, and contact information.

project-based layout–A type of layout in which the good or product is stationary, and the workers come to the site to work on it.

projected available balance (PAB)–An inventory balance projected into the future. It is the running sum of on-hand inventory minus requirements plus scheduled receipts and planned orders. Syn.: projected available inventory. See: balance.

projected available inventory–Syn.: projected available balance (PAB).

projected finish date–The current estimate of the date when an activity will be completed.

projected on hand–Projected available balance, excluding planned orders.

projected start date–The current estimate of the date when an activity will begin.

projection–Syn.: extrapolation.

promissory note–An agreement to pay a stipulated amount during an agreed time period.

promotion–One of the four Ps (product, price, place, and promotion) that constitute the set of tools used to direct the business offering to the customer. Promotion is the mechanism whereby information about the product offering is communicated to the customer. It includes public relations, advertising, sales promotions, and other tools used to persuade customers to purchase the product offering. See: four Ps.

promotional product–A product that is subject to wide fluctuations in sales because it is usually sold at a reduced price or with some other sales incentive.

proof of delivery (POD)–Carrier's records indicating the person signing for delivery with the date, time, and other related information.

proportional rate–A lower rate applied to specific parts of a shipment instead of charging the entire rate for only one part of the shipment.

proprietary assembly–An assembly designed by a manufacturer that may be serviced only with component parts supplied by the manufacturer and whose design is owned or licensed by its manufacturer.

proprietary data–Any financial, technical, or other information that is developed at the expense of the person or other entity submitting it and deemed to be of strategic or tactical importance to the company. It may be offered to customers on a restricted-use basis.

protection time–Syn.: safety lead time.

protective capacity–The resource capacity needed to protect system throughput—ensuring that some capacity above the capacity required to exploit the constraint is available to catch up when disruptions inevitably occur. Non-constraint resources need protective capacity to rebuild the bank in front of the constraint or capacity-constrained resource and/or on the shipping dock before throughput is lost and to empty the space buffer when it fills.

protective inventory–In theory of constraints, the amount of inventory required relative to the protective capacity in the system to achieve a specific throughput rate at the constraint. See: limiting operation.

protective packaging–Wrapping or covering of material that provides containment, protection, and identification of inventory in a warehouse. The material must be contained in such a way that will support movement and storage and will fit into the dimensions of storage space and transportation vehicles.

protocol–In information systems, a set of rules for defining the format and relationships for sharing information between devices. These rules govern the transmission of data across a network and serve as the grammar of data communication languages.

prototype–1) A product model constructed for testing and evaluation to see how the product performs before releasing the product to manufacture. 2) Model consisting of all files and programs needed for a business application.

prototyping–1) A specialized product design and development process for developing a working model of a product. 2) A specialized system development process for performing a determination where user needs are extracted, presented, and developed by building a working model of the system. Generally, these tools make it possible to create all files and processing programs needed for the evaluation of a business application in a matter of days or hours.

provisioning–The process of identifying and purchasing the support items and determining the quantity of each support item necessary to operate and maintain a system.

proxy–1) A written document authorizing an agent to vote a shareholder's stock at a shareholder meeting. 2) The agent designated in 1).

PRT–Acronym for prerequisite tree.

pseudo bill of material (BOM)–An artificial grouping of items that facilitates planning. See: modular bill of material (BOM), phantom bill of material (BOM), planning bill of material (BOM), super bill of material (BOM).

psychic stock–Inventory items that are prominently displayed in large quantities in an effort to stimulate customer interest in purchasing them.

psychographics–The grouping of consumers according to their behavior patterns and lifestyles.

psychosocial hazards–Elements of work or work environment that have the capacity to cause psychological or physical harm to an employee.

PTO–Acronym for package-to-order.

public blockchain–A blockchain that is open for anyone to join, conduct transactions, and participate in the consensus process. See: private blockchain.

public cloud–A form of cloud computing available to users over the public internet that is owned and maintained by a public cloud provider. See: cloud computing, private cloud.

public key–In information systems, a system in which one person holds a private key (an encryption code defining access rights) but shares another key with a set of people with whom that person will communicate. See: private key.

public ownership–A business formed under law as a separate legal entity and for which stock is publicly traded. See: partnership, private ownership.

public warehouse–The warehouse space that is rented or leased by an independent business providing a variety of services for a fee or on a contract basis. These services can include product inspection, product rating, and repackaging. These facilities are typically located near primary roads, railways, or inland waterways to facilitate rapid receiving and shipping of products. See: duty paid warehouse.

publicly traded corporation–A corporation whose stock is available on a national exchange.

public-private partnering–Cooperation between a government entity and one or more private enterprises to perform work or utilize facilities.

publish production plan–The act of sharing the production plan with the people developing the sales and operations plan and other key stakeholders who need the information to perform their jobs.

pull signal–Any signal that indicates when to produce or transport items in a pull replenishment system. For example, in just-in-time (JIT) production control systems, a kanban card is used as the pull signal to replenish parts to the using operation. See: pull system.

pull system–1) In production, the production of items only as demanded for use or to replace those taken for use. See: pull signal. 2) In material control, the withdrawal of inventory as demanded by the using operations. Material is not issued until a signal comes from the user. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decisions are made at the field warehouse itself, not at the central warehouse or plant.

pull-based inventory replenishment–A replenishment approach that utilizes customer demand as the impetus or pull to replace and optimize inventory while also reducing total net landed cost. See: pull-through distributions.

pull-through distributions–Supply chain activities that are started by the consumer. Instead of the manufacturer pushing products to stores, consumer purchases signal the manufacturer to produce more of a given product. Effectively, the consumer is pulling products to the store. See: pull-based inventory replenishment.

punitive damages–The money awarded a plaintiff not as payment for the plaintiff's losses but as punishment for the defendant's conduct.

pup–A 28-foot trailer, usually used in trucking enterprises.

purchase consolidation–The pooling of purchasing requirements by multiple areas in a company or even across companies.

purchase order–The purchaser's authorization used to formalize a purchase transaction with a supplier. A purchase order, when given to a supplier, should contain statements of the name, part number, quantity, description, and price of the goods or services ordered; agreed-to terms as to payment, discounts, date of performance, and transportation; and all other agreements pertinent to the purchase and its execution by the supplier. See: discrete purchase order.

purchase order acknowledgment–A communication by a supplier to advise a purchaser that a purchase order has been received. It usually implies acceptance of the order and its terms by the supplier.

purchase price arrangement–The practice of determining the appropriate cost- or price-contracting mechanism that governs any price and cost changes during the life of the contract.

purchase price cost analysis–The practice of analyzing the costs of the individual materials, components, and activities that make up a purchase item. This analysis is one way to review prices offered by a supplier with the purpose of understanding how the price sums up with cost elements and can assist buyers to more effectively negotiate with their suppliers.

purchase price discount–A pricing strategy in which a seller offers a customer a cheaper price in exchange for purchasing more goods.

purchase price variance (PPV)–The difference between the amount paid to the supplier and the purchase order (PO) cost or standard cost of that item.

purchase requisition–An authorization to the purchasing department to purchase specified materials in specified quantities within a specified time. See: part requisition.

purchased part–An item sourced from a supplier.

purchasing–The term used in industry and management to denote the function of and the responsibility for procuring materials, supplies, and services.

purchasing agent–A person authorized by the company to purchase goods and services for the company.

purchasing capacity–The act of buying capacity or machine time from a supplier. A company can then schedule and use the capacity of the machine or a part of the capacity of the machine as if it were in its own plant.

purchasing lead time–The total lead time required to obtain a purchased item. Included here are order preparation and release time; supplier lead time; transportation time; and receiving, inspection, and put-away time. See: lead time, supplier lead time, time-to-product.

purchasing performance measurement–Syn.: supplier measurement.

purchasing unit of measure–Syn.: unit of measure (purchasing).

pure competition–A market in which many competitors offer undifferentiated products or services within a given geographical area. Competitors are forced to accept the market price for their product. See: industry structure type.

pure monopoly–A market in which only one firm provides a particular product or service within a given area. The monopoly may be regulated or unregulated. See: industry structure type.

pure oligopoly–A market in which a few companies produce essentially the same product or service and market it within a given area. A company is forced to price its product at the going rate unless it can differentiate its product. See: industry structure type.

pure services–Services that result in few or no tangible products to the customer (e.g., education).

push system–1) In production, the production of items at times required by a given schedule planned in advance. 2) In material control, the issuing of material according to a given schedule or the issuing of material to a job order at its start time. 3) In distribution, a system for replenishing field warehouse inventories in which replenishment decision-making is centralized, usually at the manufacturing site or central supply facility. See: pull system.

push technology–The automatic updates in selected services, such as news or weather, that occur periodically as information is sent via the internet. The source of the information pushes it onto the customer. Syn.: webcasting.

push-back rack–A wheeled rack structure on which palletized materials are stored and pushed up a slightly sloping ramp from which they can eventually slide down to an aisle.

push-pull boundary–The decoupling point at which a system changes from being driven by a forecast to being driven by customer demand. See: order penetration point.

put-away–Removing the material from the dock (or other location of receipt), transporting the material to a storage area, placing that material in a staging area and then moving it to a specific location, and recording the movement and identification of the location where the material has been placed.

put-away time–The lead time between when a raw material or component arrives and when the items are available in the store. Syn.: dock-to-stock time. See: inbound staging.

put-to-light–A process that uses lights to ensure materials are placed in the correct locations. It is also used to ensure that picked items are placed correctly.

pyramid forecasting–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 then 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 (BOM), product group forecast.

Q

QCD–Acronym for quality, cost, delivery.

Q-chart–A control chart for evaluating the stability of a process in terms of a quality score. The quality score is the weighted sum of the count of events of various classifications, where each classification is assigned a weight. Syns.: quality chart, quality score chart.

QFD–Acronym for quality function deployment.

QRM–Abbreviation for quick-response manufacturing.

QRP–Acronym for quick-response program.

qualified suppliers–Suppliers that have passed qualifications requirements and are considered approved for future business but are not considered first-tier suppliers. See: first-tier supplier.

qualifiers–Syn.: order qualifier. See: order loser, order winner.

qualitative forecasting technique–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.

quality–Conformance to requirements or fitness for use. Quality can be defined through five principal approaches: (1) Transcendent quality is an ideal and a condition of excellence. (2) Product-based quality is based on a product attribute. (3) User-based quality is fitness for use. (4) Manufacturing-based quality is conformance to requirements. (5) Value-based quality is the degree of excellence at an acceptable price. Also, quality has two major components: (1) quality of conformance, which is quality defined by the absence of defects, and (2) quality of design, which is quality measured by the degree of customer satisfaction with a product's characteristics and features.

quality assurance/control–Two terms that have many interpretations because of the multiple definitions for the words assurance and control. For example, assurance can mean the act of giving confidence, the state of being certain, or the act of making certain. Control can mean an evaluation to indicate needed corrective responses, the act of guiding, or the state of a process in which the variability is attributable to a constant system of chance causes. One definition of quality assurance is all the planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a good or service will fulfill requirements for quality. One definition for quality control is the operational techniques and activities used to fulfill requirements for quality. Often, however, quality assurance and quality control are used interchangeably, referring to the actions performed to ensure the quality of a good, service, or process. See: quality control.

quality at the source–A producer's responsibility to provide 100 percent acceptable quality material to the consumer of the material. The objective is to reduce or eliminate shipping or receiving quality inspections and line stoppages as a result of supplier defects.

quality audit–A systematic, independent examination and review to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the objectives.

quality characteristic–A property of a product or service that is important enough to count or measure. See: performance measurement system.

quality chart–Syn.: Q-chart.

quality circle–A small group of people who normally work as a unit and meet frequently to uncover and solve problems concerning the quality of items produced, process capability, or process control. Syn.: quality control circle. See: small-group improvement activity.

quality control–The process of measuring quality conformance by comparing the actual with a standard for the characteristic and taking corrective actions on the difference. See: quality assurance/control.

quality control circle–Syn.: quality circle.

quality costs–The overall costs associated with prevention activities and the improvement of quality throughout the firm before, during, and after production of a product. These costs fall into four recognized categories: internal failure costs, external failure costs, appraisal costs, and prevention costs. Internal failure costs relate to problems before the product reaches the customer. These usually include rework, scrap, downgrades, reinspection, retest, and process losses. External failure costs relate to problems found after the product reaches the customer. These usually include such costs as warranty and returns. Appraisal costs are associated with the formal evaluation and audit of quality in the firm. Typical costs include inspection, quality audits, testing, calibration, and checking time. Prevention costs are those caused by improvement activities that focus on reducing failure and appraisal costs. Typical costs include education, quality training, and supplier certification. See: cost of poor quality.

quality engineering–The engineering discipline concerned with improving the quality of products and processes.

quality function deployment (QFD)–A methodology designed to ensure that all the major requirements of the customer are identified and subsequently met or exceeded through the resulting product design process and the design and operation of the supporting production management system. QFD can be viewed as a set of communication and translation tools. QFD tries to eliminate the gap between what the customer wants in a new product and what the product is capable of delivering. QFD often leads to a clear identification of the major requirements of the customers. These expectations are referred to as the voice of the customer. See: design for quality (DFQ), design for six sigma (DFSS), house of quality (HOQ).

quality loss function–A parabolic approximation of the quality loss that occurs when a quality characteristic deviates from its target value. The quality loss function is expressed in monetary units: The cost of deviating from the target increases quadratically as the quality characteristic moves farther from the target. The formula used to compute the quality loss function depends on the type of quality characteristic being used. The quality loss function was first introduced in this form by Genichi Taguchi. See: ideal quality.

quality policy–A top-management statement of the overall quality direction of an organization as required by ISO 9001.

quality score chart–Syn.: Q-chart.

quality tree–An analytical tool that visualizes quality being composed of four layers of achievement: (1) inspection, (2) process measurement and improvement, (3) process control, and (4) design for quality (DFQ).

quality trilogy–A three-pronged approach to managing quality proposed by Joseph Juran. The three legs are quality planning (developing the products and processes required to meet customer needs), quality control (meeting product and process goals), and quality improvement (achieving unprecedented levels of performance). Syn.: Juran Trilogy.

quality, cost, delivery (QCD)–Key measurements of customer satisfaction. Kaizen activity strives to improve these measurements.

quantitative forecasting techniques–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.

quantity discount–A price reduction allowance determined by the quantity or value of a purchase. See: price break.

quantity discount model–A variation of the economic order quantity (EOQ) model in which the assumption of a single price is relaxed and there is a schedule of prices based on specific volumes. Syn.: price-break model.

quantity per–The quantity of a component to be used in the production of its parent. This value is stored in the bill of material (BOM) and is used to calculate the gross requirements for components during the explosion process of material requirements planning (MRP).

quantity-based order system–Syn.: fixed order quantity (FOQ) inventory model.

quarantine–The setting aside of items from availability for use or sale until all required quality tests have been performed and conformance certified.

quasi manufacturing–A type of service operation that closely resembles a manufacturing process. The focus is on the production process, technology, costs, and quality.

question mark–In marketing, a slang term for a low-market-share but high-growth-rate product. See: growth-share matrix.

queue–A waiting line. In manufacturing, this refers to the jobs at a given work center waiting to be processed. As queues increase, so do average queue time and work in process (WIP) inventory.

queue discipline–A parameter in queuing theory that determines the order in which customers are to be served.

queue length–The quantity of items in a queue that are awaiting service.

queue management–Tactics to deal with an excess number of items, such as products or customers, waiting in line for service.

queue ratio–The ratio of the hours of slack within the job to the queue originally scheduled.

queue time–The amount of time a job waits at a work center before setup or work is performed on the job. Queue time is one element of total manufacturing lead time. Increases in queue time result in direct increases to manufacturing lead time and work-in-process inventories.

queuing analysis–The study of waiting lines. See: queuing theory.

queuing theory–The collection of models dealing with waiting line problems, such as products or customers arriving at a service facility at which waiting lines or queues may build. Syn.: waiting line theory. See: queuing analysis.

quick asset ratio–A measure of a firm's financial stability. It is calculated by subtracting inventory from current assets and then dividing that amount by current liabilities. A value greater than 1 is desirable. Syns.: quick ratio, acid test, acid test ratio.

quick changeover–The ability to shorten machine setups between different machine operation requirements to increase process flexibility. The first priority is reducing external setup time, and the second is internal setup issues. Quick changeover reduces economic order quantity (EOQ), queue and manufacturing lead times, and work in process (WIP) inventory. It also improves quality, process, and material flows.

quick ratio–Syn.: quick asset ratio. See: liquidity ratio.

quick-response (QR) Code–A two-dimensional barcode capable of storing product information that can be used for a wide variety of activities, such as inventory management, tracking and tracing goods, differentiating authentic items from counterfeit products, and verifying warranties.

quick-response manufacturing (QRM)–A company-wide strategy to cut lead times in all phases of manufacturing and office operations. With its roots in the time-based competition strategies, quick-response manufacturing focuses on the relentless pursuit of lead time reduction. While using manufacturing resources planning for higher-level planning, quick-response manufacturing often uses a replenishment technique called paired-cell overlapping loops of cards, which combines the best of push and pull strategies. See: paired-cell overlapping loops of cards with authorization (POLCA).

quick-response program (QRP)–A system of linking final retail sales with production and shipping schedules back through the chain of supply. This system employs point-of-sale scanning and electronic data interchange and may use direct shipment from a factory to a retailer. See: continuous replenishment.

quotation–A statement of price, terms of sale, and a description of goods or services offered by a supplier to a prospective purchaser. This can also be known as a bid. When given in response to an inquiry, it is usually considered an offer to sell. See: bid.

quotation expiration date–The date on which a quoted price is no longer valid.

R

R chart–A control chart in which the subgroup range, R, is used to evaluate the stability of the variability within a process. Syn.: range chart.

R&D–Abbreviation for research and development.

R&D order–Syn.: experimental order.

RACI (responsible, accountable, consulted, and informed) analysis–An acronym used to describe a document that identifies who is responsible, who is accountable, who should be consulted, and who should be kept informed for various aspects of a project or process.

rack–A storage device for handling material in pallets. A rack usually provides storage for pallets arranged in vertical sections with one or more pallets to a tier. Some racks accommodate more than one-pallet-deep storage.

racking–A function performed by a rack-jobber—a full-function intermediary who performs all regular warehousing functions and some retail functions, typically stocking a display rack.

radio frequency identification (RFID)–A system used to store data about items through the use of electronic tags and electromagnetic transmitters. RFID systems can be used to locate items or track material as it moves and do not require close proximity or line-of-sight access.

rail gauge–The spacing of the width of the rails on a railway track, measured between the inner sides of the rails. In rail transport, this is a key parameter in determining interoperability because all vehicles must have running gear that is compatible with the spacing. However, this spacing can vary among countries and cause compatibility issues.

rail waybill–A freight document that indicates that goods have been received for shipment by rail. The shipper receives a copy as a receipt for acceptance.

railcar capacity–The amount of cargo that fits in a railcar.

RAM–Acronym for responsibility assignment matrix.

ramp rate–The speed at which a company expands or grows. Syn.: growth trajectory.

random access–A manner of storing records in a computer file so that an individual record may be accessed without reading other records.

random cause–Syn.: common cause.

random component–A component of demand usually describing the impact of uncontrollable variation on demand. See: time series analysis, time series decomposition.

random events–1) Occurrences that have no discernable pattern. 2) In statistics, unexplained movements occurring in historical (time series) data. See: random variation.

random forest–A machine-learning algorithm that uses the ensemble method to combine predictions from individual regression trees.

random numbers–A sequence of integers or a group of numbers (often in the form of a table) whose members show absolutely no relationship to each other anywhere in the sequence. At any point, all values have an equal chance of occurring, and they occur in an unpredictable fashion.

random sample–A selection of observations taken from all the observations of a phenomenon in such a way that each chosen observation has the same possibility of selection.

random variation–A fluctuation in data that is caused by uncertain or random occurrences. See: noise, random events.

random-location storage–A storage technique in which parts are placed in any space that is empty when they arrive at the storeroom. Although this random method requires the use of a locator record to identify part locations, it often requires less storage space than a fixed-location storage method. Syns.: floating inventory location system, floating storage location. See: fixed-location storage.

range–In statistics, the spread in a series of observations. For example, the anticipated demand for a particular product might vary from a low of 10 items to a high of 500 items per week. The range would therefore be 500–10 or 490. See: dispersion.

range chart–Syn.: R chart.

ransomware–Malicious software that renders a computer system useless by blocking access to the data until the ransom (or money) is paid.

rapid prototyping–1) The transformation of product designs into physical prototypes. Rapid prototyping relies on techniques such as cross-functional teams, data sharing, and advanced computer and communication technology (e.g., CAD, CAM, stereolithography, and data links). Rapid prototyping involves producing the prototype on production equipment as often as possible. It improves product development times and allows for cheaper and faster product testing, assessment of the ease of assembly and costs, and validation before actual production tooling. 2) The transformation of system designs into computer system prototypes with which the users can experiment to determine the adequacy of the design to address their needs. See: 3D printing.

rapid replenishment–A replenishment strategy in which the supplier prepares shipments at predetermined intervals and varies the quantity based on recent sales data. Sales data may be supplied via a point-of-sale system. See: continuous replenishment.

rate basis point–The center of shipping in a specific area. It is used to determine shipping rates.

rate of return on investment–The efficiency ratio relating profit or cash flow incomes to investments. Several different measures of this ratio are in common use.

rate variance–The difference between the actual output rate of product and the planned or standard output rate.

rate-based scheduling–A method for scheduling and producing based on a periodic rate (e.g., daily, weekly, or monthly). This method has traditionally been applied to high-volume and process industries. The concept has also been applied within job shops using cellular layouts and mixed-model level schedules when the production rate is matched to the selling rate.

rated capacity–The expected output capability of a resource or system. Capacity is traditionally calculated from such data as planned hours, efficiency, and utilization. The rated capacity is equal to hours available × efficiency × utilization. Syns.: calculated capacity, effective capacity, nominal capacity, standing capacity.

ratification–The situation wherein a principal that has failed to denounce an agent's unauthorized conduct is consequently bound by the conduct.

rationalization exercise–A process of reducing the population of figures such as stock keeping unit (SKU) counts or supplier lists.

rationing–The allocation of product among consumers. When price is used to allocate product, it is allocated to those willing to pay the most.

raw material–Purchased items or extracted materials that are converted via the manufacturing process into components and products.

raw material quality improvement–An analysis of the potential value that could be gained from raw material inventory reduction. It requires analysis or simulation of the current impact of raw material quality and opportunities for reducing inventory while improving quality.

raw materials inventory–Inventory of material that has not undergone processing at a facility.

raw materials receiving process–A standard procedure to efficiently receive and process raw materials from suppliers to minimize the amount of time to receive raw materials. The process could include advanced shipping notices (ASNs), receiving inspections, barcode label scanning, use of master pack labels, use of shrink wrap, and efficient receiving and stocking procedures.

RCCP–Acronym for rough-cut capacity planning.

reach–The percentage of target customers who receive an advertising message.

reactive maintenance–Syn.: breakdown maintenance.

reactor–A special vessel to contain a chemical reaction.

real property–Land and associated rights improvements, utility systems, buildings, and other structures.

real time–The technique of coordinating data processing with external related physical events as they occur, thereby permitting prompt reporting of conditions.

real-time package tracking–The use of technology like a radio frequency identification (RFID) tag or a machine-to-machine antenna to track the movement and location of packages in real time.

reasonable rate–A pricing strategy that allows a company to profit but not to achieve monopolistic profits. This is normally determined by industry pricing analysis.

recalls–A step in the reverse logistics process when parts or products are requested to be returned because of a product defect or potential hazard resulting from government regulations or liability concerns.

receipt–1) The physical acceptance of an item into a stocking location. 2) The transaction reporting of this activity.

receivables conversion period–The length of time required to collect sales receipts. Syn.: average collection period.

receiving–The function encompassing the physical receipt of material, the inspection of the shipment for conformance with the purchase order (quantity and damage), the identification of and delivery to the destination within the receiving organization, and the preparation of receiving reports.

receiving goods inspection–The practice of inspecting goods upon receipt for any delivery discrepancies such as damage, incorrect quantity compared with purchase order or delivery paperwork, and incomplete or incorrect paperwork.

receiving point–The location to which material is being shipped. Ant.: shipping point.

receiving report–A document used by the receiving function of a company to inform others of the receipt of goods purchased.

recency, frequency, monetary (RFM)–Giving the highest rating to customers who have bought recently, bought many times, and bought in large amounts.

reconciling inventory–Comparing the physical inventory figures with the perpetual inventory record and making any necessary corrections.

reconsignment–Permission by a carrier to alter the destination and/or consignee while in transit or after the shipment has reached its original destination.

record–1) A collection of data fields arranged in a predefined format. 2) A set of related data that a computer program treats as a unit.

record accuracy–A measure of the conformity of recorded values in a bookkeeping system to the actual values. An example of this is the on-hand balance of an item maintained in a computer record relative to the actual on-hand balance of the items in the stockroom.

recovery–A reverse logistics strategy for the activities involved in the collection of used and discarded products, components, and materials. It focuses on reuse, repair, refurbishment, remanufacturing, recycling, or disposal. The objective is to recover as much of the economic value as possible, reduce waste, and minimize environmental impacts.

recovery time–In periods of insufficient capacity, jobs back up indefinitely. This leads to increased lead times and missed due dates. Recovery time is a period of time when capacity exceeds demand to allow the system to empty out. If there is not enough recovery time before the next episode of insufficient capacity, in-process inventory and lead times continue to grow.

recycle–1) The reintroduction of partially processed product or carrier solvents from one operation or task into a previous operation. 2) A recirculation process.

red bead experiment–An experiment developed by W. Edwards Deming to illustrate the impossibility of putting employees in rank order of performance. The experiment shows that it would be a waste of management's time to try to find out why one worker produced more errors than another. Management should instead improve the system, making it possible for everyone to achieve higher quality.

red zone–The lowest-level buffer zone in drum-buffer-rope scheduling where the red color is used to indicate a serious situation for the buffer.

redundancy–1) A backup capability, coming either from extra machines or from extra components within a machine, to reduce the effects of breakdowns. 2) The use of one or more extra or duplicating components in a system or equipment (often to increase reliability).

redundant component–A backup part of a machine or product.

reefer vessel–A refrigerated cargo ship that is used to transport perishable goods requiring temperature control.

reference capacity model–A simulation model with accurate operational details and demand forecasts that can provide practical capacity utilization predictions. Various alternatives for system operation can be evaluated effectively.

refrigerator car–A temperature-controlled boxcar used to transport perishable goods.

refurbished goods–Syn.: remanufactured parts.

refurbished parts–Syn.: remanufactured parts.

regen–Slang abbreviation for regeneration material requirements planning (MRP). Pronounced "ree-jen."

regeneration MRP–A material requirements planning (MRP) processing approach in which, to maintain valid priorities, the master production schedule (MPS) is totally re-exploded down through all bills of material. New requirements and planned orders are completely recalculated or regenerated at that time. Ant.: net change MRP.

regional air carriers–Air transport services that run between less populated areas and major cities in the United States. These companies have annual revenues less than $100 million.

registration to standards–A process in which an accredited, independent third-party organization conducts an on-site audit of a company's operations against the requirements of the standard to which the company wants to be registered. Upon successful completion of the audit, the company receives a certificate indicating that it has met the standard requirements.

regression analysis–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.

regularized schedule–A schedule having certain items produced at regular intervals.

rejected inventory–Inventory that does not meet quality requirements but has not yet been sent to rework, scrapped, or returned to a supplier.

rejection–The act of identifying an item as not meeting quality specifications.

relational database–A software program that allows users to obtain information drawn from two or more databases that are made up of two-dimensional arrays of data.

relationship map–A graphic map of the relationship between the business functions. It shows the inputs and outputs flows across functions. It is useful to show process flows, disconnections in processes, and proposed processes. Relationship maps show the products and services of a given unit, how work flows through organizational boundaries, and the relationships between functions represented by boxes in the map.

relationship marketing–A form of target marketing in which the type and time of communications are determined by the customer. Syn.: permission marketing.

release–The authorization to produce or ship material that has already been ordered.

released order–Syn.: open order.

release-to-start manufacturing–The time it takes from when an order is released until the beginning of the manufacturing process. This delay occurs because of the movement of materials and the changing of lines. It is non-productive time that increases lead time.

relevant costs–Those costs incurred because of a decision. The costs would not have resulted unless the decision was made and implemented. They are therefore relevant to the decision.

relevant range–The range of activity planned for a firm.

reliability–1) The probability that a product will perform its specified function under prescribed conditions without failure for a specified period of time. 2) A design parameter that can be made part of a requirements statement. 3) A Supply Chain Operations Reference (SCOR) performance attribute. The reliability attribute addresses the ability to perform tasks as required. Reliability focuses on the predictability of the outcome of a process. Typical metrics for the reliability attribute include on time, the right quantity, and the right quality. Reliability is a customer- focused attribute. See: mean time between failures (MTBF), mean time to failure (MTTF).

reliability engineering–The function responsible for the determination and application of appropriate reliability tasks and criteria during the design, development, manufacture, test, and support of a product that will result in achievement of the specified product reliability.

remanufactured parts–Components or assemblies that are refurbished or rebuilt to perform the original function. Syns.: refurbished goods, refurbished parts.

remanufacturing–1) An industrial process in which worn-out products are restored to like-new condition. In contrast, a repaired product normally retains its identity, and only those parts that have failed or are badly worn are replaced or serviced. 2) The manufacturing environment where worn-out products are restored to like-new condition.

remanufacturing resource planning–A manufacturing resource planning system designed for remanufacturing facilities.

remedial maintenance–Unscheduled maintenance performed to return a product or process to a specified performance level after a failure or malfunction.

remote diagnostics–The capability of determining the cause of a problem from an off-site location.

remote return authorization–The practice of allowing the customer or retailer to assess the state of returned materials or products to determine if they can be reused. If an item cannot be reused, the customer or retailer can dispose of it and eliminate the costs of shipping and handling items that will ultimately be discarded.

reneging–A queuing theory term for leaving a line after entering it but before receiving service. See: balking.

renewable energy–Energy that is collected from natural resources that are continually replenished, such as sunlight and wind. These are sometimes referred to as renewables.

reorder cycle–Syn.: replenishment lead time.

reorder point (ROP)–Syn.: order point.

reorder quantity–1) In a fixed reorder quantity system of inventory control, the fixed quantity that should be ordered each time the available stock (on-hand plus on-order) falls to or below the reorder point (ROP). 2) In a variable reorder quantity system, the amount ordered from time period to time period varies. Syn.: replenishment order quantity.

repair bill of material (BOM)–In remanufacturing, the BOM defining the actual work required to return a product to service. The process to return a product to service is based on inspection and determination of actual requirements. See: disassembly bill of material (BOM).

repair factor–The percentage of time on average that an item must be repaired for return to a serviceable condition. The repair factor is also expressed as a percentage applied to the quantity per assembly on the bill of material (BOM). It is useful for forecasting materials and capacity requirements for planning purposes. Syn.: frequency of repair. See: occurrence factor, replacement factor.

repair order–Syn.: rework order.

repair parts–Syn.: service parts.

repair parts demand–Syn.: service parts demand.

repairables–Items that are technically feasible to repair economically.

repeatability of measurement–The variation in measurements obtained when one measurement instrument is used several times by an appraiser while measuring the identical characteristic on the same part.

repetitive industries–The group of manufacturers that produce high-volume, low-variety products such as spark plugs, lawn mowers, and paper clips. See: repetitive manufacturing.

repetitive manufacturing–The repeated production of the same discrete products or families of products. Repetitive methodology minimizes setups, inventory, and manufacturing lead times by using production lines, assembly lines, or cells. Work orders are no longer necessary; production scheduling and control are based on production rates. Products may be standard or assembled from modules. Repetitiveness is not a function of speed or volume. Syns.: repetitive process, repetitive production. See: discrete manufacturing, project manufacturing.

repetitive process–Syn.: repetitive manufacturing.

repetitive production–Syn.: repetitive manufacturing.

replacement cost–A method of setting the value of inventories based upon the cost of the next purchase.

replacement cost systems–A method of inventory valuation that assigns an item cost based on the next item price incurred.

replacement factor–The percentage of time on average that an item will require replacement. The replacement factor is also expressed as a percentage applied to the quantity per assembly on the bill of material (BOM). It is useful for forecasting materials and capacity requirements for planning purposes. See: occurrence factor, repair factor.

replacement order–An order for the replacement of material that has been scrapped.

replacement parts–Parts that can be used as substitutes but differ from completely interchangeable service parts in that they require some physical modification (e.g., boring, cutting, or drilling) before they can replace the original part.

replan cycle–The time it takes to implement a new production plan into the plant's actual production plan. The replan cycle occurs after completion of the last cycle and takes the form of a rolling document.

replanning frequency–In a material requirements planning (MRP) system, the amount of time between successive runs of the MRP model. If the planner does not run MRP frequently enough, the material plan becomes inaccurate because material requirements and inventory status change with the passage of time.

replenishment–Relocating material from a bulk storage area to an order pick storage area and documenting this relocation.

replenishment interval–Syn.: replenishment period.

replenishment lead time–The total period of time that elapses from the moment it is determined that a product should be reordered until the product is back on the shelf available for use. Syn.: reorder cycle.

replenishment order quantity–Syn.: reorder quantity.

replenishment period–The time between successive replenishment orders. Syn.: replenishment interval. See: review period.

representation state transfer (REST)–A framework that provides standards to make communications easier between web-based computer systems.

reprocessed material–Goods that have gone through selective rework or recycle.

reproducibility–A production program's ability to regularly produce products of the correct quantity and quality.

repurpose–To take something and use it for something else not originally intended. The materials may be repaired, reconditioned, and repackaged for resale or used in a different manner through remanufacturing, recycling, or salvage.

request for information (RFI)–An inquiry to a potential supplier about that supplier's product or service for potential use in the business. The inquiry can provide certain business requirements or be of a more general exploratory nature. See: request for proposal (RFP).

request for proposal (RFP)–A document used to solicit vendor price proposals for a particular product or service in order to compare prices. Syns.: invitation for bid (IFB), request for quote (RFQ). See: competitive bid, request for information (RFI).

request for quote (RFQ)–A document used to solicit vendor responses when a product has been selected and price quotations are needed from several vendors. Syn.: request for proposal (RFP). See: competitive bid.

required capacity–Syn.: capacity required.

requirements definitions–Specifying the inputs, files, processing, and outputs for a new system but without expressing computer alternatives and technical details.

requirements explosion–The process of calculating the demand for the components of a parent item by multiplying the parent item requirements by the component usage quantity specified in the bill of material (BOM). Syn.: explosion.

requirements traceability–The capability to determine the source of demand requirements through record linkages. It is used in analyzing requirements to make adjustments to plans for material or capacity. See: pegging.

requisition–Syn.: part requisition.

rerouting flexibility–Accommodating unavailability of equipment by quickly and easily using alternate machines in the processing sequence.

rescheduling–The process of changing order or operation due dates, usually as a result of their being out of phase with production or customer commitments.

rescheduling assumption–A fundamental assumption of material requirements planning (MRP) logic that existing open orders can be rescheduled in nearer time periods far more easily than new orders can be released and received. As a result, planned order receipts are not created until all scheduled receipts have been applied to cover gross requirements.

rescheduling notice–A message from planning system software to change the planned start and/or finish date of an order. This often is the result of a change in plans of a parent item. See: nervousness.

research and development (R&D)–A function that performs basic and applied research and develops potential new products.

resellers–Organizations intermediate in the manufacturing and distribution process, such as wholesalers and retailers, that purchase goods or services with the intention of selling them rather than consuming or using them.

reservation–The process of designating stock for a specific order or schedule. See: allocation.

reserve–Contingency funds set aside to mitigate risk.

reserve stock–Syn.: safety stock.

reserved material–Syns.: allocated material, assigned material.

reshoring–Returning the location of production, manufacturing and service activities back to the organization's home country.

residence time–Syn.: process time.

residual income–The net operating income that an investment center earns above the minimum required return on its operating assets.

residual inventory–Inventory created by the canceling or rescheduling of an order or left over because of lot sizing.

resilience–In the supply chain, the ability to return to a position of equilibrium after experiencing an event that causes operational results to deviate from expectations. Resilience can be improved by increasing the number of response options and/or decreasing the time to execute those options. Resilience is improved by risk monitoring and control.

resilient supply chain benchmark–A benchmark used by publicly-traded U.S. companies in consumer electronics, retail, and pharmaceutical industries to assess supply chain resilience. The framework uses 31 indicators to determine operational and strategic supply chain resilience.

resource–Anything that adds value to a good or service in its creation, production, or delivery.

resource breakdown structure–A hierarchical structure that breaks resources into categories and types. This structure can be useful for plan resource schedules, including human resources.

resource calendar–A calendar of working days and nonworking days that shows when resources are idle. Typically, the calendar includes holidays and weekends. See: manufacturing calendar.

resource contention–Simultaneous need for a common resource. See: concurrency.

resource driver–The objects that are linked to an activity that consumes resources at a specified rate. For example, a resource driver is a purchase order (the object) that when placed (the activity) consumes hours (the rate) of purchasing (the resource).

resource leveling–The process of scheduling (and rescheduling) the start and finish dates of operations (or activities) to achieve a consistent rate of resource usage so that resource requirements do not exceed resource availability for a given time period.

resource limited schedule–Project schedule with no early or late start or finish dates. The activity and scheduled start and finish dates show the expected availability of resources. Syn.: resource-constrained schedule.

resource management–1) The planning and validation of all organizational resources. 2) The effective identification, planning, scheduling, execution, and control of all organizational resources to produce a good or service that provides customer satisfaction and supports the organization's competitive edge and ultimately its organizational goals. 3) An emerging field of study emphasizing the systems perspective, encompassing both the product and process life cycles, and focusing on the integration of organizational resources toward the effective realization of organizational goals. Resources include materials; maintenance, repair, and operating supplies; production and supporting equipment; facilities; direct and indirect employees; staff; administrative and professional employees; information; knowledge; and capital. Syn.: integrated resource management (IRM).

resource planning–Capacity planning conducted at the business plan level. Resource planning is the process of establishing, measuring, and adjusting limits or levels of long-range capacity. It is normally based on the production plan but may be driven by higher-level plans beyond the time horizon of the production plan (e.g., the business plan). It addresses those resources that take long periods of time to acquire. Resource planning decisions always require top management approval. Syn.: resource requirements planning. See: capacity planning, long-term planning.

resource profile–The standard hours of load placed on a resource by time period. Production lead-time data is taken into account to provide time-phased projections of the capacity requirements for individual production facilities. See: bill of resources, capacity planning using overall factors (CPOF), product load profile, rough-cut capacity planning (RCCP).

resource requirements planning–Syn.: resource planning.

resource-constrained schedule–Syn.: resource limited schedule. See: drum-buffer-rope (DBR).

resource-limited scheduling–The scheduling of activities so that predetermined resource availability pools are not exceeded. Activities are started as soon as resources are available (with respect to logical constraints), as required by the activity. When not enough of a resource exists to accommodate all activities scheduled on a given day, a priority decision is made. Project finish may be delayed, if necessary, to alter schedules constrained by resource usage.

response time–The elapse of time or average delay between the initiation of a transaction and the results of the transaction.

responsibility assignment matrix (RAM)–A tool to ensure that each component of work in a project is assigned to a responsible person.

responsible landfill–Landfill operations designed to turn waste into recoverable resources, minimize the amount of space consumed, and maximize the operational life of the landfill.

responsible procurement–Ensuring the use of ethical sources of goods and services where a firm does business to bring about a positive impact and minimize the negative impacts on societies and environments. This includes processes for identifying, assessing, and managing the environmental, social, and ethical risks in the supply chain. Another important strategy is reducing, reusing and recycling materials. Syn.: environmentally responsible purchasing.

responsive demand-supply matching (RDSM)–The ability to sense demand exceptions; target revenue opportunities; and resolve supply challenges through planning of constrained resources (material, labor, and equipment capacity) and the allocation of supply across the network to best meet demand aligned with the business strategy.

responsiveness–Refers to the speed or promptness with which an organization or supply chain provides products and services to the customer. Responsiveness is a Supply Chain Operations Reference (SCOR) performance attribute.

REST–Acronym for representation state transfer.

restoration of future economic benefit–A term used to define the unit or aggregate value received from not disposing of a return but instead renewing it for future use.

restore–To use a system backup to recover lost data and transactions after a data loss event. See: backup.

retail method–A method of inventory valuation in which the value is determined by applying a predetermined percentage based on retail markup to the retail price in order to determine its inventory value based on cost.

retailer–A business that takes title to products and resells them to final consumers.

retainage–A percentage of a contract value that is withheld pending project completion and approval.

retention efficiency–In marketing, a measurement of how well a company creates repeat customers.

retirement of debt–The termination of a debt obligation by appropriate settlement with the lender. Repayment or forgiveness is understood to be in full amount unless partial settlement is specified.

retrofit–An item that replaces components originally installed on equipment. It is a modification to in-service equipment.

return–The activities associated with the reverse flow of goods and services. Detailed activities encompass identification of the need to return, disposition decision-making, scheduling of the return, and shipment and receipt of the returned goods. In SCOR DS, this also includes any service components from a customer in order to diagnose condition and evaluate entitlement.

return adaptability–The maximum sustainable percentage increase in returns that can be achieved in 30 days. For Source, this includes raw materials to suppliers. For Deliver, this includes finished goods from customers.

return authorization–A document that provides information about why a part or product is being returned and provides a decision to the customer on whether a return is authorized. This enables the supplying company to plan for the next appropriate action or actions, such as shipping a replacement unit to the customer, scheduling the return unit for warranty repair, scheduling the return unit for a repair not covered by warranty, returning the unit to stock, or returning the unit to the vendor.

return authorization required–See: return material authorization (RMA).

return cost recovery–The process of recovering part or all of the cost from the vendor when a defect in a returned item is determined to be related to a component purchased from that vendor.

return cycle time–The average time associated with return processes, which typically start with the decision to return a product and end with collecting and restocking the product.

return disposal costs–The costs that occur from discarding or recycling products that are returned because they have reached the end of their useful lives or are obsolete. These costs are commonplace in the consumer goods industry.

return goods handling–The work a company puts into accepting returned goods from its customers.

return load optimization–Combining customer deliveries with pickups for returned items to optimize transportation.

return material authorization (RMA)–1) A form that must be completed that describes the product returned and why it was returned. 2) A number given to authorize the acceptance of returned items. 3) The signatory authorization that is normally required to return the goods. See: return authorization required.

return merchandise authorization–Syn.: return material authorization (RMA).

return on assets (ROA)–Net income for the previous 12 months divided by total assets. See: return on owner's equity (ROE).

return on investment (ROI)–A relative measure of financial performance that provides a means for comparing various investments by calculating the profits returned during a specified time period. In theory of constraints, ROI is calculated by subtracting operating expenses from throughput and then dividing that amount by the investment. See: payback.

return on net assets–Profit divided by assets excluding depreciation.

return on owner's equity (ROE)–A financial measurement of how successful a company is in creating income for the owners of the organization. A comparison of the ROE with the return on assets (ROA) indicates the effectiveness of financial leverage employed by the firm. The measurement is calculated by dividing net income by average owner's equity. See: return on assets (ROA).

return on supply chain fixed assets–A measurement of the return an organization receives from its invested capital in supply chain fixed assets. This includes the fixed assets used in Orchestrate, Plan, Order, Source, Transform, Fulfill, and Return. It is calculated as (Supply Chain Revenue – Total Supply Chain Management Cost) ÷ Supply Chain Fixed Assets.

return on working capital–A measure of profit on the amount of capital consumed. It is calculated as after-tax operating income divided by net working capital.

return policy conformance integration–Procedures and technology that ensure conformance to return policies.

return policy included with shipping document–The practice of including the return policy with the shipping documentation.

return renewal–The options for a returned product that will be transformed and placed back into stock or sent directly to a customer. These options include reuse, recycle, remanufacture, refurbish, upcycle, downcycle, etc., for reverse supply chains, return supply chains, and replenish supply chains.

return repair/refurbish–Reviewing a returned item and determining whether it can be repaired, recycled, remanufactured, or disassembled to sell any usable parts.

return resell–Providing returned goods to alternate channels for resale into the market. The resale may include refurbished goods, where the secondary channel may be responsible for product support and warranty on refurbished products.

return shipment insurance–Financial protection from problems that might occur with high-value excess inventory return shipments.

return shipping consolidation–The routing of authorized returns to central hubs or facilities where they can be combined and routed to the correct location in order to eliminate the need for sorting.

return to supplier–Material that was rejected by the buyer's inspection department and is awaiting shipment back to the supplier for repair or replacement.

return tracking–Following the path of a return shipment by using the tracking number assigned by the carrier.

returns–A step in the reverse logistics process when a customer sends a product back for any of several possible reasons including the product being defective, damaged, out of season, or outdated (end-of-life); because it failed to meet expectations; or because it represented excess inventory.

returns allowance–The quantity of product that a customer is allowed to return, usually calculated as a percentage of total purchases. This quantity may be captured in a contract or warranty.

returns center–A facility where an organization's returns are processed. This is also commonly referred to as a centralized return center.

returns depositing–The review process for returned goods generally performed at the point of return. The process begins with triage, which is a general practice to inspect the product. Dispositioning options may include: repair and return to user, return to stock — no issue found, repair and refurbish, or send to salvage. Each of these options may involve different service providers and practices.

returns inventory costs–All of the costs associated with handling returned inventory.

returns inventory reduction–A process designed to decrease returns through efficiently receiving, processing, and disposing of returned products.

returns management process–A process of handling returns that includes environmentally sound disposal or recycling, composition of repair instructions, warranty repairs, and collection of return data.

returns management systems (RMS)–Software systems created specifically to feed the reconciliation processes. These systems include: receiving for unknown goods coming in, processing of returns, tracking of return authorizations, shipping, quality assurance, metrics, and other reporting.

returns policy to reduce returns inventory–Evaluating and establishing a standard approach for handling business returns. Topics covered by this policy typically include methods for handling buyer's remorse, defective items, buyer over-purchasing, and warranty claims.

returns processing cost–All of the costs associated with dealing with returned items after they have been received. These costs occur when returned items are repaired, discarded, or replaced.

returns receiving refurbishment–The practice of returning defective material to the receiving function for processing. Repairs, modifications, or enhancements are made by the same receiving personnel, rather than sending the materials to personnel who handle the Make process elements. Then, the materials are sent to the shipping function for return to the original recipient.

reuse–1) The use of an item for a new purpose (e.g., repurpose) or similar purpose with only minimal reprocessing. Reuse differs from remanufacture as it assumes less repair or reclamation activity to the reused good. 2) Part of the 3 R's of waste management: reduce, reuse, and recycle. These are part of the global effort to reduce waste and minimize consumption of the world's resources.

revenue–The income received by a company from sales of products or services. Revenues can come from other sources including stock owned in other companies, income from selling property, or other company assets that are not a typical part of the core business.

reverse auction–An internet auction in which suppliers attempt to underbid their competitors. Company identities are known only by the buyer.

reverse engineering–The process of disassembling, evaluating, and redesigning a competitor's product for the purpose of manufacturing a product with similar characteristics without violating any of the competitor's proprietary manufacturing technologies.

reverse flow scheduling–A scheduling procedure used in some process industries for building process train schedules. The scheduling starts with the last stage and proceeds backward (countercurrent to the process flow) through the process structure.

reverse logistics–A complete supply chain dedicated to the reverse flow of products and materials for the purpose of returns, repair, remanufacture, and/or recycling.

reverse logistics service–A service that arranges for the disposal of returned products.

reverse supply chain–The planning and controlling of the processes of moving goods from the point of consumption back to the point of origin for repair, reclamation, recycling, or disposal. See: reverse logistics.

review period–The time between successive evaluations of inventory status to determine whether to reorder. See: replenishment period.

revision level–A number or letter representing the number of times a part drawing or specification has been changed.

rework–Reprocessing to salvage a defective item or part.

rework lead time–The time required to rework material in-house or at a supplier's location.

rework order–A manufacturing order to rework and salvage defective parts or products. Syns.: repair order, spoiled work order.

RFID–Acronym for radio frequency identification.

RFM–Acronym for recency, frequency, monetary.

RFP–Acronym for request for proposal.

RFQ–Acronym for request for quote.

right size frequency of production wheel–A lean scheduling tool used to produce standard production sequences for different items in a high-product-mix environment to minimize changeovers and increase throughput. See: mixed-model scheduling.

right the first time–A term used to convey the concept that it is beneficial and more cost-effective to take the necessary steps the first time to ensure that a good or service meets its requirements than to provide a good or service that will need rework or not meet customers' needs. In other words, an organization should engage in defect prevention rather than defect detection.

right-to-work state–A state that allows workers to choose whether or not to join a union.

risk acceptance–A decision to take no action to deal with a risk or an inability to format a plan to deal with the risk.

risk adjusted discount rate–A discount rate that is higher for more risky projects and lower for less risky projects.

risk analysis–A review of the uncertainty associated with the research, development, and production of a product, service, or project.

risk appetite–Amount and type of risk that an organization is willing to pursue or retain.

risk avoidance–Changing a plan to eliminate a risk or to protect plan objectives from its impact.

risk breakdown structure–A tool that helps identify potential project risks, which are organized by risk categories and subcategories.

risk category–A cluster of risk causes with a label such as external, environmental, technical, or organizational.

risk management–The identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.

risk management planning–The process of defining how to identify and minimize risk factors for a project.

risk matrix–A matrix combining two dimensions of risk: (1) the likelihood of an event's occurrence and (2) the impact if the event occurs.

risk mitigation–Reducing exposure to risk in terms of either its likelihood or its impact.

risk pooling–A method often associated with the management of inventory risk. Manufacturers and retailers that experience high variability in demand for their products can pool together common inventory components associated with a broad family of products to buffer the overall burden of having to deploy inventory for each discrete product.

risk priority number (RPN)–A tool used in failure mode and effects analysis (FMEA) to quantify and prioritize potential risks by multiplying severity, occurrence, and detection.

risk rating–A numerical assessment of the risk associated with a supplier, customer, or product, normalized and used for comparison purposes.

risk register–A report that has summary information on qualitative risk analysis, quantitative risk analysis, and risk response planning. This register contains all identified risks and associated details.

risk response plan–A document defining known risks including description, cause, likelihood, costs, and proposed responses. It also identifies current status of each risk.

risk response planning–The process of developing a plan to avoid risks and to mitigate the effect of those that cannot be avoided.

risk sharing–Dividing a common risk between two or more parties (suppliers, customer, insurer), reducing exposure and sharing potential loss.

risk tolerance–An organization's or stakeholder's readiness to accept a threat or potential negative outcome in order to achieve its objectives.

risk transfer–A form of risk management that involves distributing the risk with other parties. The extent to which risk is distributed can depend on the reliability and clarity of the risk-sharing arrangements. Risk could be transferred through insurance or other forms of contract.

RMA–Acronym for return material authorization.

RMSE–Acronym for root mean squared error.

ROA–Acronym for return on assets.

road waybill–A shipping document used to control shipments of goods for road transport. The document travels with the shipment and serves as a receipt for goods and evidence of the contract of carriage.

road-rail vehicle–A dual-mode vehicle that can operate both on rail tracks and conventional roads.

robotic process automation (RPA)–The use of automated robotic equipment or technology to perform standard, repetitive, rule-based tasks in place of human effort in order to improve speed, efficiency, and accuracy.

robotics–Replacing activities previously performed by humans with mechanical devices or robots that can either be operated by humans or run by computer. Difficult-to-do, dangerous, or monotonous tasks are likely candidates for robots to perform.

robust design–Type of design for a product or service that plans for intended performance even in the face of a harsh environment.

robustness–The condition of a product or process design that remains relatively stable with a minimum of variation even though factors that influence operations or usage, such as environment and wear, are constantly changing.

ROE–Acronym for return on owner's equity.

ROI–Acronym for return on investment.

rolling forecast–Moving the forecast horizon forward to new periods by adding recent data (and perhaps dropping the oldest data).

rolling wave planning–A form of planning in which the work to be performed in the near term is planned in detail and longer-term work is planned at a lesser level of detail.

roll-on/roll-off (RORO) ship–A ship that allows vehicles and trailers to be driven on and off without the use of cranes.

root cause analysis–Analytical methods to determine the core problem(s) of an organization, process, product, market, and so forth. See: current reality tree (CRT), five whys, stratification analysis.

root mean squared error (RMSE)–A measure of the difference between estimated and actual values. The RMSE is calculated by taking the square root of the mean squared error (MSE).

ROP–Acronym for reorder point.

rope–One of the three devices required for proper management of operations. (The other two are drum and buffer.) The rope is the information flow from the drum to the front of the line (material release), which chokes the release of materials to match the flow through the constraint.

RORO–Acronym for roll-on/roll-off.

rotable part–A broken part that is repaired and then sent to another customer as a replacement as part of a closed loop of repairable products. The person originally returning the broken part also receives a repaired or rotable part.

rotable spares pool–An inventory of serviceable parts that can replace a customer's broken part to help minimize customer downtime.

rough-cut capacity planning (RCCP)–The process of converting the master production schedule (MPS) into requirements for key resources, often including labor; machinery; warehouse space; suppliers' capabilities; and, in some cases, money. Comparison with available or demonstrated capacity is usually done for each key resource. This comparison assists the master scheduler in establishing a feasible MPS. Three approaches to performing RCCP are the bill of labor (resources and capacity) approach, the capacity planning using overall factors approach, and the resource profile approach. See: bill of resources, capacity planning, capacity planning using overall factors (CPOF), product load profile, resource profile.

route management system–A software program that helps dispatchers organize their fleets and route trucks to ensure the most efficient travel directions to their destinations.

route sheet–Syn.: routing.

routing–1) Information detailing the method of manufacture of a particular item. It includes the operations to be performed, their sequence, the various work centers involved, and the standards for setup and run. In some companies, the routing also includes information about tooling, operator skill levels, inspection operations and testing requirements, and so on. Syns.: bill of operations, instruction sheet, operation chart, operation list, operation sheet, route sheet, routing sheet. See: bill of labor, bill of resources. 2) In information systems, the process of defining the path a message will take from one computer to another computer.

routing attack–An attack against an internet service provider's (ISP's) participation in a web-enabled system, such as a blockchain.

routing guide–A shipping tool used to manage logistics activities for shipments between two points. It contains mode and carrier information, freight rates, and service requirements.

routing sheet–Syn.: routing.

RPA–Acronym for robotic process automation.

RPN–Acronym for risk priority number.

rules automation–Rules using triggers that initiate the rule, conditions that define the rule, and actions that perform tasks automatically based on preset criteria.

run–A quantity of production being processed.

run chart–A graphical chart that illustrates how a process is performing over time. By statistically analyzing a run chart, a process can be determined to be under or out of control. The most common types of data used to construct the charts are ranges, averages, percentages and counts, and individual process attributes (e.g., temperature). Syn.: run diagram. See: c-Chart, P chart, R chart, U chart, X-bar chart.

run diagram–Syn.: run chart.

run order–Syn.: manufacturing order.

run sheet–A log-type document used in continuous processes to record raw materials used, quantity produced, in-process testing results, and so on. It may serve as an input document for inventory records.

run size–Syn.: standard batch quantity (SBQ).

run standards–Syn.: run time.

run time–The time required to process a piece or lot at a specific operation. Run time does not include setup time. Syn.: run standards.

running sum of forecast errors–The arithmetic sum of the differences between actual and forecasted demand for the periods being evaluated.

run-out list–1) A list of items to be scheduled into production in sequence by the dates at which the present available stock is expected to be exhausted. 2) A statement of ingredients required to use up an available resource (e.g., how much of Y resource is required to consume 300 pounds of X).

run-out method–A method of assigning available production or storage capacity to products based on the product's demand and inventory level.

rush order–An order that for some reason must be fulfilled in less than normal lead time.

S

S&OE–Acronym for sales and operations execution.

S&OP–Acronym for sales and operations planning.

SA8000–A widely recognized international standard for managing human rights in the workplace. It provides an auditable framework for assuring that social accountability is being stewarded by an organization.

SaaS–Abbreviation for software-as-a-service.

safety capacity–In theory of constraints, the planned amount by which available capacity exceeds current productive capacity. This capacity provides protection from planned activities (such as resource contention), preventive maintenance, and unplanned activities (such as resource breakdown, poor quality, rework, or lateness). Safety capacity plus productive capacity plus excess capacity equals 100 percent of capacity. Syn.: capacity cushion. See: protective capacity.

safety data sheet (SDS)–A document that is part of the materials information system and accompanies the product. It was formerly referred to as the manufacturing safety data sheet. The document is prepared by the manufacturer and provides information regarding the safety and chemical properties to downstream users and, if necessary, regarding the long-term storage, handling, and disposal of the product. Among other factors, the SDS describes: the hazardous components of a product; how to treat leaks, spills, and fires; and how to treat improper human contact with the product. Syn.: material safety data sheet (MSDS).

safety factor–1) The ratio of average strength to the worst stress expected. It is essential that the variation, in addition to the average value, be considered in design. 2) The numerical value used in the service function (based on the standard deviation or mean absolute deviation of the forecast) to provide a given level of customer service. For example, if the item's mean absolute deviation is 100 and a .95 customer service level (with a safety factor of 2.06) is desired, then a safety stock of 206 units should be carried. This safety stock must be adjusted if the forecast interval and item lead times differ. Syn.: service factor. See: service function.

safety lead time–An element of time added to normal lead time to protect against fluctuations in lead time so that an order can be completed before its real need date. When used, the material requirements planning (MRP) system, in offsetting for lead time, will plan both order release and order completion for earlier dates than it would otherwise. Syns.: protection time, safety time.

safety stock–Stock planned to be in inventory to protect against fluctuations in demand or supply, including uncertainty, forecast errors, long lead times, or supplier shortages. Syns.: buffer stock, reserve stock. See: hedge, inventory buffer.

safety stock planning–The process of identifying the correct amount of inventory that should be held for a given item to guard against a stockout and meet desired customer service levels.

safety stock reduction–Pursuing a more aggressive reorder point (ROP) or safety stock target that increases the risk of a stockout. Often this is done to help mitigate the effects of an expected sharp downturn in demand.

safety time–Syn.: safety lead time.

salable goods–A part or assembly authorized for sale to final customers through the marketing function.

sale-and-leaseback–An agreement by which a firm first sells its assets to a financial institution and then leases these same assets from the financial institution.

sales and operations execution (S&OE)–A short-term (zero to 3 months) business planning process that connects daily operations to the strategic activities of sales and operations planning (S&OP) (3 to 24 months). This weekly process translates plans from S&OP into daily operations and actions. It includes tactical decision-making through the monitoring of demand and supply, forecast accuracy, production execution, and inventory levels. See: sales and operations planning (S&OP).

sales and operations planning (S&OP)–A mid- to long-term supply chain planning practice that compares the demand plan with inventory levels and production capacity and analyzes where any imbalances to the plan might exist. The process integrates all the plans for the business (sales, marketing, development, manufacturing, sourcing, and financial) and produces a high-level production plan, covering a horizon sufficient to plan for resources and to support the annual business planning process. S&OP is performed at least once a month and is reviewed by management at an aggregate (product family) level. The S&OP process links the strategic plans for the business with its execution and reviews performance measurements for continuous improvement. See: aggregate planning, executive sales and operations planning (executive S&OP), integrated business planning (IBP), production plan, production planning, sales plan, tactical planning.

sales cycle time–Time from a product entering a floor until it is completely sold out.

sales forecast–Syn.: forecast.

sales mix–The proportion of individual product-type sales volumes that make up the total sales volume.

sales operations management–The management of activities and processes to ensure that the sales function runs efficiently, is well integrated with other functional areas, and supports the overall business strategy.

sales order number–A unique control number assigned to each new customer order, usually during order entry. It is often used by order promising, master scheduling, cost accounting, invoicing, and so forth. For some make-to-order (MTO) products, it can also take the place of an end-item part number by becoming the control number that is scheduled through the finishing operations.

sales plan–A time-phased statement of expected customer orders anticipated to be received (incoming sales, not outgoing shipments) for each major product family or item. It represents sales and marketing management's commitment to take all reasonable steps necessary to achieve this level of actual customer orders. A sales plan is a necessary input to the production planning process (or sales and operations planning (S&OP) process). It is expressed in units identical to those used for the production plan (as well as in sales dollars). See: aggregate planning, production plan, production planning, sales and operations planning (S&OP).

sales planning–The process of determining the overall sales plan to best support customer needs and operations capabilities while meeting general business objectives of profitability, productivity, competitive customer lead times, and so on, as expressed in the overall business plan. See: production planning, sales and operations planning (S&OP).

sales promotion–1) Sales activities that supplement both personal selling and marketing, coordinate the two, and help to make them effective (e.g., displays). 2) More loosely, the combination of personal selling, advertising, and all supplementary selling activities. 3) Promotion activities—other than advertising, publicity, and personal selling—that stimulate interest, trial, or purchase by final customers or others in the marketing channel.

sales quota–The level of sales that an individual or group is expected to meet.

sales representative–An employee authorized to accept a customer's order for a product. Sales representatives usually go to the customer's location when industrial products are being marketed.

salvage–Property that, because of its worn, damaged, deteriorated, or incomplete condition or specialized nature, has no reasonable prospect of sale or use as serviceable property without major repairs or alterations but that has some value in excess of its scrap value.

salvage value–1) The cost recovered or that could be recovered from used property when removed, sold, or scrapped. It is a factor in appraisal of property value and in computing depreciation. 2) The market value of a machine or facility at any point in time. Normally, it is an estimate of an asset's net value at the end of its estimated life.

sample–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.

sample average–A key measure that represents the central tendency of a sample.

sample range–The largest value in a sample minus the smallest value in the sample.

sample size–The number of elements selected for analysis from the population.

sample standard deviation–A key measure that represents the spread or dispersion of a sample.

sampling–1) A statistical process in which generalizations regarding an entire body of phenomena are drawn from a relatively small number of observations. 2) In marketing, the delivery of free trial goods to consumers.

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

sampling plan–Within acceptance sampling, the determination of the sample size and the number of defectives that will trigger rejection of a lot.

sawtooth diagram–A quantity-versus-time graphic representation of the order point or order quantity inventory system showing inventory being received and then used up and reordered.

SBQ–Acronym for standard batch quantity.

SBT–Acronym for scan-based trading.

SBU–Acronym for strategic business unit.

SCADA–Acronym for supervisory control and data acquisition.

scalability–1) How effectively a company can grow its business in order to meet demand. 2) How effectively the solution to a problem can be scaled up as the problem's size increases.

scan-based trading (SBT)–As an item is sold, scanned information is sent to the manufacturer and creates a replacement order of that item. This process often is used in large retail store chains as well as at large-volume product producers.

Scanlon plan–A system of group incentives on a company-wide or plant-wide basis that sets up one measure that reflects the results of all efforts. The universal standard is the ratio of labor costs to sales value added by production. If there is an increase in production sales value with no change in labor costs, productivity has increased while unit cost has decreased.

scanner–An electronic device that optically converts coded information into electrical control signals for data collection or system transaction input.

scarcity–A concept central to economics that means less of a good is freely available than consumers would like.

scatter chart–A graphical technique to analyze the relationship between two variables. Two sets of data are plotted on a graph, with the y-axis used for the variable to be predicted and the x-axis used for the variable to make the prediction. The graph will show possible relationships. Although two variables might appear to be related, they might not be. Those who know most about the variables must make that evaluation. The scatter chart is one of the seven tools of quality. Syns.: cross plot, scatter diagram, scatterplot.

scatter diagram–Syn.: scatter chart.

scatterplot–Syn.: scatter chart.

SCEM–Acronym for supply chain event management.

scenario forecasts–Plans for how an organization will respond to anticipated future situations.

scenario planning–A planning process that identifies critical events before they occur and uses this knowledge to determine effective alternatives.

schedule–A timetable for planned occurrences (e.g., shipping schedule, master production schedule (MPS), maintenance schedule, or supplier schedule). Some schedules include the starting and ending times for activities (e.g., project schedule).

schedule activity–During a project, a specific piece of work performed that has estimated costs, duration, and resource requirements.

schedule board–Syn.: control board.

schedule chart–Usually a large piece of graph paper used in the same manner as a control board. Where the control board often uses strings and markers to represent plans and progress, the schedule chart is typically filled in with pencil. See: control board.

schedule control–Control of a plant floor by schedules rather than by job orders (called order control). Schedules are derived by taking requirements over a period of time and dividing that by the number of workdays allowed to run the parts or assemblies. Production completed is compared with the schedule to provide control. This type of control is most frequently used in repetitive and process manufacturing.

schedule harmony–The arrival of goods at a transfer point with a small buffer time in front of their departure via a different transportation mode.

schedule performance index (SPI)–Earned value (EV) divided by planned value, which measures a project's schedule efficiency.

schedule variance (SV)–Earned value (EV) minus planned value, which measures a project's schedule performance.

scheduled downtime–Planned shutdown of equipment or a plant to perform maintenance or to adjust to softening demand.

scheduled finish date–In project management, an activity's planned finish time, normally between the early finish time and the late finish time. It may reflect resource limitations. Syn.: planned finish date.

scheduled load–The standard hours of work required by scheduled receipts (i.e., open production orders).

scheduled receipt–An open order that has an assigned due date. See: on-order stock, open order.

scheduled start date–In project management, an activity's planned start time, normally between the early start time and the late start time. It may reflect resource limitations. Syn.: planned start date.

scheduler–A general term that can refer to a material planner, dispatcher, or a combined function.

scheduling–The act of creating a schedule, such as a shipping schedule, master production schedule (MPS), maintenance schedule, or supplier schedule.

scheduling algorithm–Syn.: scheduling rules.

scheduling rules–Basic rules that can be used consistently in a scheduling system. Scheduling rules usually specify the amount of time to allow for a move, queue, load calculation, and so forth. Syn.: scheduling algorithm.

science, technology, engineering, and mathematics (STEM)–A term referring to the technical disciplines of science, technology, engineering, and mathematics. The term is most often used in reference to education.

scientific inventory control–Syn.: statistical inventory control.

scientific management–Managing a production system using scientific principles, usually those principles established by Frederick Taylor.

SCM–Acronym for supply chain management.

scope–In project management, the totality of products to be created by a project.

scope change–In project management, a change to a project's scope, usually requiring an adjustment to the project's budget and schedule.

scope creep–The informal addition of unfunded features and services to a project. Scope creep is closely monitored and controlled to ensure that agreed-upon output of a project can be achieved within the budgeted timeline and costs.

scope definition–In project management, subdividing a project into smaller components to facilitate management.

SCOR–Acronym for Supply Chain Operations Reference.

SCOR beginner–A Supply Chain Operations Reference (SCOR) competency level. A beginner has not fully mastered work skills and has a limited situational perception of work activities. A beginner is familiar with the basic process and can sequence the steps. The experienced beginner remains task-oriented rather than goal-oriented but is starting to get some perspective. A beginner treats all aspects of work separately but with equal importance.

SCOR competency level–A Supply Chain Operations Reference (SCOR) measure that describes the level or state of qualification to perform a certain role or tasks.

SCOR competent–A Supply Chain Operations Reference (SCOR) competency level. It represents an employee who acts consciously to satisfactorily perform long-term goals and plans. At this level, an employee is goal-oriented and able to figure out a sequence of tasks to accomplish a goal.

SCOR DS–An acronym for Supply Chain Operations Reference Digital Standard.

SCOR expert–A Supply Chain Operations Reference (SCOR) competency level. The expert has an intuitive understanding of the situation and zooms in on the central aspects to apply analytical reasoning, problem-solving techniques, and leadership. Experts understand what is possible and apply experience and knowledge to master new situations.

SCOR metrics–In Supply Chain Operations Reference (SCOR), metrics measure the ability of processes to achieve the strategic objectives associated with performance attributes. SCOR recognizes three levels of predefined metrics: Level 1 metrics are diagnostics for the overall health of the supply chain. Level 2 metrics serve as diagnostics for the level 1 metrics. Level 3 metrics serve as diagnostics for level 2 metrics.

SCOR novice–A Supply Chain Operations Reference (SCOR) competency level. A novice is an untrained beginner new to the field or activity. A novice needs standard, written procedures or step-by-step detailed instructions. A novice has no ability to make judgments based on a problem situation. Novices can neither judge whether the instructions are working nor judge which ones are important because they have no context to assess them against.

SCOR performance attribute–A classification for metrics used to formulate a strategic direction. The Supply Chain Operations Reference (SCOR) performance attributes are reliability, responsiveness, agility, cost, profit, assets, environmental, and social.

SCOR processes–One of the four parts of the Supply Chain Operations Reference (SCOR) framework. This section contains the standard descriptions of management procedures and their relationships.

SCOR proficient–A Supply Chain Operations Reference (SCOR) competency level. A proficient professional sees the situation as a whole and acts from personal knowledge and conviction. Proficient company professionals prioritize the importance of situations and use their knowledge and skills to focus on problem-solving.

SCOR team leader–In Supply Chain Operations Reference (SCOR) implementation, the primary coordinator and manager of the planning and execution phases of the SCOR improvement program.

scorecard–This is a performance measurement tool used by a company that summarizes its key performance indicators. Another use of scorecards is to measure the supply chain members and ensure that their performance is meeting company standards.

SCOR-Lean Sigma–The practice of combining elements from the Supply Chain Operations Reference (SCOR) model, lean thinking and six sigma to apply the most appropriate tools and techniques from each methodology to address the problem at hand.

scrap–Material outside of specifications and possessing characteristics that make rework impractical.

scrap factor–A factor that expresses the quantity of a particular component that is expected to be scrapped upon receipt from a vendor, upon completion of production, or while that component is being built into a given assembly. It is usually expressed as a decimal value. For a given operation or process, the scrap factor plus the yield factor is equal to 1. For example, if the scrap factor is 30 percent (or .3), then the yield is 70 percent (or .7).

In manufacturing planning and control systems, the scrap factor is usually related to a specific item in the item master but may be related to a specific component in the product structure. For example, if 50 units of a product are required by a customer and a scrap factor of 30 percent (a yield of 70 percent) is expected, then 72 units (computed as 50 units divided by .7) should be started in the manufacturing process. Syn.: scrap rate. See: yield, yield factor.

scrap rate–Syn.: scrap factor.

s-curve–In project management, a graphic display of cumulative project attributes such as costs, labor hours, or percentage of work. The name derives from the typical shape of the curve.

SDS–1) Acronym for single-digit setup. 2) Acronym for safety data sheet.

search models–Operations research models that attempt to find optimal solutions with adaptive searching approaches.

seasonal adjustment–Syn.: seasonal index.

seasonal component–A component of demand, usually describing the impact on demand of variations that occur because of the time of year (e.g., quarter, month or week). See: time series analysis, time series decomposition.

seasonal harmonics–Syn.: harmonic smoothing.

seasonal index–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.

seasonal inventory–Inventory built up to smooth production in anticipation of a peak seasonal demand. Syn.: seasonal stock.

seasonal stock–Syn.: seasonal inventory.

seasonal variation–See: seasonality.

seasonality–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.

SEC–Acronym for the Securities and Exchange Commission (U.S.).

secondary highways–Highways that are predominantly rural in nature.

second-order smoothing–Syn.: double exponential smoothing.

second-tier suppliers (or customers)–A supplier's suppliers (or customer's customers).

secular trend–The general direction of the long-run change in the value of a particular time series.

secure electronic transaction (SET)–In e-commerce, a system for guaranteeing the security of financial transactions conducted over the internet.

secure server–In e-commerce, a web server that protects users' messages from interception while being transmitted over the internet.

Securities and Exchange Commission (SEC)–A U.S. government agency that has primary responsibility for enforcing the federal securities laws and regulating the securities industry. The SEC was created by the Securities Exchange Act of 1934 with a mission to protect investors; maintain fair, orderly, and efficient markets; and facilitate capital formation.

security information and event management (SIEM)–A system used to detect and respond to suspicious activity or security threats from various information systems, firewalls, databases, and applications and generate a preventative or remedial response.

SED–Acronym for shipper's export declaration.

segment customers–Grouping customers by common characteristics to facilitate sales.

seiketsu–A term that refers to standardization (e.g., standard locations for tools and equipment).

seiri–A term that refers to organizing or throwing away things that are not needed.

seiso–A term that states that a productive workplace is found through cleanliness.

seiton–A term that refers to neatness in the workplace that is achieved by straightening offices and work areas.

self-directed work team–Generally, a small, independent, self-organized, and self-controlling group in which members flexibly plan, organize, determine, and manage their duties and actions as well as perform many other supportive functions. The team may work without immediate supervision and can often have authority to select, hire, promote, or discharge its members.

self-service warranty claim submittal–A practice in which customers and service providers submit warranty claims through the internet, reducing internal validation and processing workload.

seller's market–A market condition in which goods cannot easily be secured (purchased) and when the economic forces of business tend to cause goods to be priced at the supplier's estimate of value.

selling and administrative costs–Those costs that are associated with the marketing, sales, and administrative functions of a plant or company. These costs are a function of overhead costing and an important number in the cost of goods sold (COGS) calculation.

selling expense–An expense or class of expense incurred in selling or marketing (e.g., salespersons' salaries and commissions, advertising, samples, or shipping costs).

selling, general, and administrative (SG&A) expenses–The fixed costs associated with a company. Examples are salaries, marketing costs, customer service costs, occupancy expenses, and other overhead. In retail, this is called the cost of selling.

semifinished goods–Products that have been stored in an uncompleted state and are awaiting final operations that will adapt them to different uses or customer specifications.

semipassive tag–A radio frequency identification (RFID) tag that sends out data, is self-powered, and widens its range by harnessing power from the reader. See: radio frequency identification (RFID).

semiprocess flow–A manufacturing configuration in which most jobs go through the same sequence of operations even though production is in job lots.

semivariable costs–Costs that change in increments. They remain fixed over a given range and, outside that range, change to a new level.

semiworks–Syn.: pilot plant.

send ahead–The movement of a portion of a lot of material to a subsequent operation before completion of the current operation for all units of the lot. The purpose of sending material ahead is to reduce the manufacturing lead time. See: operation overlapping.

sensing–The translation of market data into operational and executional planning to better manage demand shaping and other commercial activities including price to manage assortment, run-out strategies, and new products.

sensitivity analysis–A technique for determining how much an expected outcome or result will change in response to a given change in an input variable. For example, for a given projected level of resources, a sensitivity analysis could determine the effect on net income if variable costs of production increased 20 percent.

sensors–Devices that can monitor differences in conditions to control equipment on a dynamic basis.

separable cost–A cost that is assignable to a given portion of a business.

sequencing–Determining the order in which a manufacturing facility is to process a number of different jobs in order to achieve certain objectives.

sequential–In numeric sequence, usually in ascending order.

sequential development process–A process in which the product or services idea must clear specific hurdles before it can go on the next development phase.

sequential-sampling plan–Controlling quality by repeatedly sampling units and each time making a decision to accept or reject a batch or to continue sampling.

serial number–A unique number assigned for identification to a single piece that will never be repeated for similar pieces. Serial numbers are usually applied by the manufacturer but can be applied at other points, including by the distributor or wholesaler.

serial shipping container code–An 18-character designation identifying boxes or pallets that are part of a shipment covered by an automated shipment notice.

serpentine picking–A picking technique aimed at reducing travel time by 50 percent and improving the flow of pickers down each aisle. This technique involves picking from both sides of each aisle as the picker goes down it. This is in contrast to picking from one side of the aisle and then crossing to the other side.

server–A computer or software package that provides a specific kind of service to client software running on other computers. The term can refer to a particular piece of software, a web server, or the machine on which the software is running. A single server machine could have several different server software packages running on it, thus providing many different servers to clients on the network.

server address–The internet address of a server.

server factory–A facility making minor improvements to products. It is set up primarily to avoid the host country's barriers to trade.

service–Sometimes used to describe those activities that support the production or distribution functions in any organization, such as customer service and field service.

service acceptance criteria–A set of criteria used to ensure that a service meets its functionality and quality requirements prior to customer acceptance.

service availability–The ability of a service or service component to perform its required function at or over an agreed period of time.

service blueprint–A service analysis method that allows service designers to identify processes involved in the service delivery system, isolate potential failure points in the system, establish time frames for the service delivery, and set standards for each step that can be quantified for measurement.

service bureau model–A business strategy in which a company outsources certain products and services from another company. The company prefers to concentrate on its core business rather than expending resources on the outsourced item.

service capacity–The number of daily customers a firm is designed to serve. Actual throughput may be larger or smaller.

service catalog–A database or structured document with information about all available services. The service catalog is part of the service portfolio and contains information about two types of services: (1) customer-facing services that are visible to the business and (2) supporting services required by the service provider to deliver customer-facing services. See: service portfolio.

service component–Part of a service that when combined with other elements will deliver a complete service.

service continuity–The capability to deliver a service without interruption or with consistent availability as agreed.

service desk–The single point of contact between users and the service provider that manages incidents and service requests and also handles communication with the users.

service factor–Syn.: safety factor.

service failure analysis–A technique that identifies the underlying causes of any situation or event that can cause damage to the customer's satisfaction during the service process. See: failure analysis, failure mode analysis (FMA), failure mode and effects analysis (FMEA).

service function–The mathematical relationship of the safety factor to the service level (e.g., the fraction of demand routinely met from stock).

service industry–1) In its narrowest sense, an organization that provides an intangible product (e.g., medical or legal advice). 2) In its broadest sense, all organizations except farming, mining, and manufacturing. The service industry includes retail trade; wholesale trade; transportation and utilities; finance, insurance, and real estate; construction; professional, personal, and social services; and local, state, and federal governments.

service industry supply chain–A supply network that transforms resources into services, with or without physical products, to satisfy customer needs.

service knowledge management system (SKMS)–A repository of organizational knowledge and data that is used to manage a company's products and services more effectively.

service level–A measure (usually expressed as a percentage) of satisfying demand through inventory or by the current production schedule in time to satisfy the customers' requested delivery dates and quantities. In a make-to-stock (MTS) environment, service level is sometimes calculated as the percentage of orders picked complete from stock upon receipt of the customer order, the percentage of line items picked complete, or the percentage of total dollar demand picked complete. In make-to-order (MTO) and design-to-order (DTO) environments, service level is the percentage of times the customer-requested or acknowledged date was met by shipping complete product quantities. Syns.: level of service, measure of service. See: cycle service level.

service level target–Specific measurable characteristics of a service that an organization commits to achieving.

service life cycle–An approach to service management that emphasizes the importance of coordination and control across the various functions, processes, and systems necessary to manage the full life cycle of services. The cycle considers the strategy, design, transition, operation, and continual improvement of services.

service lifetime–The duration of restorative and regenerative cycles in circular supply chain management that represents the period from the substance's extraction from the earth until it is discarded. This lifetime indicates how long a substance is used, recovered, and reused until it is incinerated or landfilled. See: circular economy.

service management–A set of capabilities and processes to direct and control the organization's activities and resources for planning, design, transition, delivery, and improvement of services to deliver value to customers.

service management system–A system that includes service management policies, objectives, plans, processes, documented information, and resources required for the planning, design, transition, delivery, and improvement of services to meet service requirements. See: service requirement.

service parts–Those modules, components, and elements that are planned to be used without modification to replace an original part. Syns.: repair parts, spare parts.

service parts demand–The need or requirement for a component to be sold by itself, as opposed to being used in production to make a higher-level product. Syns.: repair parts demand, spare parts demand.

service parts revenue–The value of sales of replacement parts to external and internal customers, net of discounts and coupons.

service phases–The number of phases necessary to service a new arrival in the system.

service pipeline–A database or structured document listing all services that are under consideration for development but are not yet available to customers. The pipeline provides a business view of possible futures services and is part of the service portfolio that is not normally published to customers. See: service portfolio.

service portfolio–The complete set of services that is managed by a service provider. The portfolio is used to manage the entire life cycle of all services and includes three categories: (1) service pipeline (proposed or in development), 2) service catalog (live or available for deployment), and (3) retired services.

service positioning–Syn.: product positioning.

service provider–An organization that manages and delivers a service or services to customers.

service rate–In queuing theory, the rate at which arrivals are processed through the production or service system or the number of processed arrivals per unit of time. See: queuing theory.

service reliability–A dimension of service quality referring to the capability of a service provider to perform dependably and accurately.

service request–A request for information, advice, or access to a service or a pre-approved change. The request typically initiates a service action that has been agreed upon as a normal part of the service delivery.

service requirement–All of the customer, user, and organizational needs related to services and the service management system that are stated or obligatory.

service response logistics–Syn.: integrated logistics.

service time–The time taken to serve a customer (e.g., the time required to fill a sales order or the time required to fill a request at a tool crib).

service transition–All the activities involved in moving a new or modified service to or from the live environment.

service versus investment chart–A curve showing the amount of investment that will be required to give various levels of customer service. Typical investments include inventory, infrastructure, labor, and other resources to improve customer service.

serviceability–1) A design characteristic that facilitates the easy and efficient performance of service activities. Service activities include those activities required to keep equipment in operating condition, such as lubrication, fueling, oiling, and cleaning. 2) A measurement of the degree to which servicing of an item will be accomplished within a given time under specified conditions. See: maintainability. 3) The competitive advantage gained when an organization focuses on aspects such as the speed and courtesy with which customer complaints and questions are answered, following up with customers after the sale to ensure satisfaction, and offering on-site service for product repairs. 4) A measure of repairs and maintenance based on cost, speed, and convenience.

service-level agreement (SLA)–A document that represents the terms of performance for organic support between a service provider and a customer. The agreement describes the service, documents service level targets, and specifies the responsibilities of the information technology (IT) service provider and the customer. A single agreement may cover multiple services or multiple customers.

service-oriented architecture (SOA)–A style of information technology (IT) design that guides all aspects of creating and using business services throughout their life cycles as well as defining and provisioning the IT infrastructure that enables different computer applications to exchange data and participate in business processes, regardless of the operating systems or programming languages underlying those applications.

servo system–A control mechanism linking a system's input and output that is designed to feedback system output data to regulate the operation of the system.

SET–Acronym for secure electronic transaction.

setup–1) The work required to change a specific machine, resource, work center, or line from making the last good piece of item A to making the first good piece of item B. 2) The refitting of equipment to neutralize the effects of the last lot produced (e.g., teardown of the just-completed production or preparation of the equipment for production of the next scheduled item). Syns.: changeover, turnaround time.

setup cost–A cost associated with preparing the resources to produce product. Syns.: changeover cost, turnaround cost.

setup flexibility–The ability for changeover to a different product to take place with little delay.

setup lead time–Syn.: setup time.

setup time–The time required for a specific machine, resource, work center, process, or line to convert from the production of the last good piece of item A to the first good piece of item B. Syn.: setup lead time. See: single-minute exchange of die (SMED).

seven new tools of quality (N7)–A set of quality improvement tools developed by the Union of Japanese Scientists and Engineers (JUSE). The N7 are affinity diagram, interrelationship digraph, matrix diagram, tree diagram, prioritization matrix, process decision program chart, and activity network diagram. See: basic seven tools of quality (B7).

seven tools of quality–Syn.: basic seven tools of quality (B7).

seven wastes–The common forms of waste identified in the lean or just-in-time (JIT) philosophy that limit improvement. These include overproduction, inventory waste, motion waste, defects, waiting, and transport waste. These are often referred to as Shingo's seven wastes, named after Shigeo Shingo a pioneer in the lean or JIT philosophy.

seven zeros–The seven zeros are an essential part of the Toyota Production System. They are zero defects, zero excess lot size, zero setups, zero breakdowns, zero excess handling, zero lead time, and zero surging.

SG&A–Abbreviation for selling, general and administrative.

shape–An element of variability results that measures the output of a process. If a process results in product dimensions falling within a bell-shaped curve, then the process is running normally.

shared services–Consolidation of support processes to form a separate unit to provide services to the parent company and external customers. This lowers costs and may improve support because the shared services unit is more focused.

shareholder wealth–The present value of all anticipated payments to the shareholders of a firm.

shelf life–The amount of time an item may be held in inventory before it becomes unusable.

shelf-life control–A technique of physical first in, first out usage aimed at minimizing stock obsolescence.

Shewhart circle of quality–Syn.: plan-do-check-act (PDCA).

Shewhart cycle–Syn.: plan-do-check-act (PDCA).

ship-age limit–The date after which a product cannot be shipped to a customer.

shipper's export declaration (SED)–An export/import document prepared by the shipper before a shipment can be exported and presented to a government authority of the country in which the shipper resides. It specifies details about the goods to be shipped, including their value, weight, and destination.

shipper-carriers–Companies that ship goods in their own vehicles. Many large retailers are shipper-carriers because they own their own fleets.

shipping–The function that performs tasks for the outgoing shipment of parts, components, and products. It includes packaging, marking, weighing, and loading for shipment.

shipping documents–The documents needed for international or domestic transportation of goods.

shipping lane–A specific route that ocean liners take between ports to help traffic flow and to avoid the most dangerous areas of the ocean.

shipping lead time–The number of working days normally required for goods to move between a shipping and receiving point plus acceptance time in days at the receiving point.

shipping manifest–A document that lists the pieces in a shipment. A manifest usually covers an entire load regardless of whether the load is to be delivered to a single destination or to many destinations. Manifests usually list the items, piece count, total weight, and the destination name and address for each destination in the load.

shipping order–A document similar to a shipping manifest except this document also specifies the method of shipping. See: shipping manifest.

shipping order debit memo–The document used to authorize the shipment of rejected material back to the supplier and create a debit entry in accounts payable (AP).

shipping point–The location from which material is sent. Ant.: receiving point.

shipping tolerance–An allowable deviation that the supplier can ship over or under the contract quantity.

shipping, receiving, and traffic clerk–A warehouse employee who is responsible for organizing, sorting, and transferring goods from one location to another.

ship-to-stock–See: dock-to-stock.

shitsuke–The effort and discipline required to continually enforce changes made in an organization.

shojinka–Continually balancing the number of workers in a work center to meet demand with a minimum number of workers to improve flow. It requires a line design—for example, U-shaped—that supports varying the number of workers.

shop calendar–Syn.: manufacturing calendar.

shop committee–The committee that represents the union in its relations and negotiations with a company or plant. This is the first stage for the unionized employees to vet complaints.

shop floor control–A system for using data from the shop floor to maintain and communicate status information about shop orders (manufacturing orders) and work centers. Shop floor control can use order control or flow control to monitor material movement through the facility. The major subfunctions of shop floor control are: (1) assigning priority of each shop order; (2) maintaining working-process quantity information; (3) conveying shop order status information to the office; (4) providing actual output data for capacity control purposes; (5) providing quantity by location by shop order for work in process (WIP) inventory and accounting purposes; and (6) providing measurement of the efficiency, utilization, and productivity of the workforce and machines. The major subfunctions for flow control are based primarily on production rates and feeding work into production to meet these planned rates and then monitoring and controlling production. See: flow control, order control, production activity control (PAC).

shop order–Syn.: manufacturing order.

shop order close-out station–A stocking point on the shop floor where completed production of components is transacted (received) into and subsequently transacted (issued) to assembly or other downstream operations. This technique is used to reduce material handling by avoiding the need to move items into and out of stockrooms while simultaneously enabling a high degree of inventory record accuracy.

shop order reporting–Syn.: production reporting.

shop packet–A package of documents used to plan and control the shop floor movement of an order. The packet may include a manufacturing order, operations sheets, engineering blueprints, picking lists, move tickets, inspection tickets, and time tickets.

shop planning–The function of coordinating the availability of materials handling, materials, resources, setup, and tooling so that an operation or job can be done on a particular machine. Shop planning is often part of the dispatching function. The term shop planning is sometimes used interchangeably with dispatching, although dispatching does not necessarily include shop planning. For example, the selection of jobs might be handled by the centralized dispatching function, while the actual shop planning might be done by the foreman or a representative.

shop scheduling–Syn.: operations scheduling.

shop traveler–Syn.: traveler.

short haul–Transporting goods a relatively short distance in terms of area traveled. The actual distance that is considered short would be specific to the mode of transport, for example, airplane versus motor carrier.

short shipment–A situation in which a piece of freight designated by the shipping document is missing from delivery.

shortage cost–The marginal profit that is lost when a customer orders an item that is not immediately available in stock.

shortage gaming–When suppliers ration or apportion supplies and buyers, in response, inflate their orders in an attempt to receive what they actually need.

short-cycle manufacturing–Syn.: just-in-time (JIT) manufacturing.

shortest processing time (SPT) rule–A dispatching rule that directs the sequencing of jobs in ascending order by processing time. If this rule is followed, the greatest number of jobs at a work center per time period will be processed. As a result, the average lateness of jobs at that work center is minimized, but some jobs will be very late. Syn.: smallest processing time rule. See: earliest due date (EDD), earliest operation due date (ODD).

short-haul discrimination–A pricing strategy in which more is charged for a shorter haul than for a longer haul when the route and the delivery are the same. It is used to push the long-haul process.

short-range planning horizon–A planning or forecasting time frame encompassing a few days to at most a few weeks.

short-sea shipping–A form of water transportation that does not cross an ocean but instead utilizes coastal and inland waterways to move shipments from maritime ports to their destination. It is often used as an alternative to road transportation.

short-term planning–The function of adjusting limits or levels of capacity within relatively short periods of time, such as parts of a day, a full day, or a week.

should cost modeling–A process where a customer uses a supplier's mindset to estimate costs typically incurred by a supplier that are rolled into an item's price. The method helps customers determine what a product should cost based on estimated costs for raw materials, labor and production overhead as well as the profit margin.

shrinkage–See: inventory shrinkage.

shrinkage factor–A percentage factor used to compensate for the expected loss during the manufacturing cycle of an item. This factor differs from the scrap factor in that it affects all components of the item, while the scrap factor relates to only one component's usage. Syn.: shrinkage rate.

shrinkage rate–Syn.: shrinkage factor.

SIC–Acronym for standard industrial classification.

sideways loading–Loading pallets by turning them so the wider 48-inch side is facing you.

SIEM–Acronym for security information and event management.

sigma–A Greek letter (Σ) commonly used to designate the standard deviation of a population.

signed message–In information systems, a message for which the sender can be authenticated.

significant part number–A part number that is intended to convey certain information, such as the source of the part, the material in the part, or the shape of the part. Using numbers to represent this information usually makes these part numbers longer than corresponding nonsignificant part numbers. Ant.: nonsignificant part number.

significant variances–Those differences between planned and actual performance that exceed established thresholds and that require further review, analysis, and action.

silo effect–A mindset affecting an organization in which departments or groups do not share information, goals, priorities, tools, and/or processes with other departments or functions. Organizations that have this mindset are often referred to as being siloed.

simple interest–1) Interest that is not compounded (i.e., interest not added to the income-producing investment or loan). 2) The interest charged under the condition that interest in any time period is only charged on the principal.

simple moving average–A moving average where the oldest data point is dropped and the newest data point is included in the calculation. All data points are assigned equal weights. See: moving average forecast, weighted moving average.

simple regression–Regression analysis involving only one independent variable.

simplex algorithm–A procedure for solving a general linear programming problem.

simplex method–An approach to solving linear programming models.

simplification–Improving quality and cutting costs by removing complexity from a product or service.

simulation–1) The technique of using representative or artificial data to reproduce in a model various conditions that are likely to occur in the actual performance of a system. It is frequently used to test the behavior of a system under different operating policies. 2) Within manufacturing resource planning, using the operational data to perform what-if evaluations of alternative plans to answer the question, "Can we do it?" If yes, the simulation can then be run in the financial mode to help answer the question, "Do we really want to?" See: what-if analysis.

simultaneous design/engineering–Syn.: participative design/engineering.

simultaneous engineering–Syn.: participative design/engineering.

single exponential smoothing–Syn.: first-order smoothing.

single integrator solution–An enterprise resource planning implementation chosen entirely from one vendor.

single smoothing–Syn.: first-order smoothing.

single sourcing–A method of supply in which a company strategically selects only one supplier for a purchased good or service in an effort to establish a strategic relationship that fosters high quality, high reliability, short lead times, and cooperative interactions. In contrast, organizations often have at least two suppliers for each purchase to ensure continuity of supply or to foster price competition between the suppliers.

single-card kanban system–Syn.: one-card kanban system.

single-channel, single-phase system–A queuing system that has only one channel for arrivals to enter and only one phase to completely service the arrival.

single-digit setup (SDS)–The idea of performing setups in less than 10 minutes. See: single-minute exchange of die (SMED).

single-echelon inventory optimization–The determination of optimal levels of inventory for each independent node of a supply chain. See: multi-echelon inventory optimization (MEIO).

single-factor productivity–The average amount of a given product (output) attributed to a unit of a given resource (input). Factors include labor and capital. Syn.: partial productivity factor. See: multifactor productivity.

single-level backflush–A form of backflush that reduces inventory of only the parts used in the next level down in an assembly or subassembly.

single-level bill of material (BOM)–A display of components that are directly used in a parent item. It shows only the relationships one level down. See: flat bill of material (BOM).

single-level where-used–Documentation for a component that lists each parent in which that component is directly used and in what quantity. The documentation is usually made available through the technique known as implosion.

single-minute exchange of die (SMED)–The lean concept of reducing the amount of time it takes to change a production line or machine from one product to the next. See: one-touch exchange of die (OTED), setup time, single-digit setup (SDS).

single-period inventory models–Inventory models used to define economical or profit-maximizing lot-size quantities when an item is ordered or produced only once (e.g., newspapers, calendars, tax guides, greeting cards, or periodicals) while facing uncertain demands. Syn.: static inventory models.

single-sampling plan–A quality control method of taking only one sample and then making a decision to accept or reject a batch of items.

single-source supplier–A company that is selected to have 100 percent of the business for a part although alternate suppliers are available. See: sole-source supplier.

SIPOC–Acronym for supplier, input, process, output, customer. It is pronounced "sye-pahk."

six sigma–A methodology that uses a set of management tools and techniques for the improvement of business processes. The intent is to reduce the probability of an error or defect by decreasing process variation and improve product quality.

six sigma quality–The six sigma approach is a set of concepts and practices that focuses on reducing variability in processes and reducing deficiencies in the product. Important elements are (1) producing only 3.4 defects for every 1 million opportunities or operations and (2) process improvement initiatives striving for six sigma-level performance. Six sigma is a business process that permits organizations to improve bottom-line performance by creating and monitoring business activities to reduce waste and resource requirements while increasing customer satisfaction. See: design for six sigma (DFSS).

skew–The degree of nonsymmetry shown by a frequency or probability distribution.

skid–A type of pallet that does not have a bottom deck. See: pallet.

skill-based compensation–A method of employee compensation that bases the employee's wage rate on the number of skills the employee is qualified to perform. People who are qualified to do a wider variety of skills are paid more. See: labor grade.

skills inventories–An organized file of information on each employee's skills, abilities, knowledge, and experience, usually maintained by a personnel office. See: labor grade.

skills matrix–A visual tool to show the skills and skill levels of employees. It is used primarily when forming a team so the leader knows what skills are necessary to accomplish the team's goals. It also is used when implementing a full cross-training process to ensure that all workers are cross-trained to the same levels.

SKMS–Acronym for service knowledge management system.

SKU–Acronym for stock keeping unit. It is pronounced "skew."

SLA–Acronym for service-level agreement.

slack–Syns.: float, slack time.

slack time–In project management, the amount of time that an activity may be delayed from its early start without delaying the project finish date. Syn.: slack. See: free float, free slack.

slack time rule–A dispatching rule that directs the sequencing of jobs based on slack time. Slack time is calculated as (days left until due date multiplied by hours per day) minus standard hours of work left on a specific job. For example, (5 × 8) – 12 = 28 hours of slack. The smaller the amount of slack time for a specific job is, the higher the priority that job becomes in the sequence.

slip sheets–Thin sheets of fiberboard or plastic on which product is stacked. These are used as an alternative to wood pallets because they take up little space in warehouses or shipping containers. They sometimes are used in place of a pallet if the items are not strong enough to withstand being stacked on heavy pallets.

slot-based production–A term used in lean manufacturing that describes a production schedule that is held level but leaves some openings to meet unexpectedly high levels of demand. It is part of the extra capacity planning process.

slow-moving inventory monitoring–Regularly reviewing stock keeping units (SKUs) with stock levels that are higher than their total consumption within the last 12 months. Slow-moving inventory is classified into three reason codes: opportunistic stock, technical (supply) reasons, and market (demand) reasons.

slow-moving items–Those inventory items that have a low turnover or a relatively low rate of usage compared with the normal amount of inventory carried.

slushy zone–The time period between the frozen zone and the liquid zone when changes to the master production schedule (MPS) can often be accommodated because capacity and material are committed to a lesser extent. See: frozen zone, liquid zone, planning time fence.

smallest processing time rule–Syn.: shortest processing time (SPT) rule.

small-group improvement activity–An organizational technique for involving employees in continuous-improvement activities. See: quality circle.

SMART–Acronym for specific, measurable, achievable (or attainable), relevant (or realistic), and timely, as related to a description of organizational goals.

smart contracts–A self-executing contract with the terms of an agreement between a buyer and a seller written into lines of blockchain code. These contracts use technology to automatically ensure that contract terms are met. If a new action, transaction, or other information is added to the blockchain—or decentralized digital ledger of the agreement—that does not match the terms of the agreement already included in the blockchain, the information will be rejected, thus ensuring that all parties adhere to the contract.

smart factory–A cyber-physical system of interconnected machines and communication devices that use artificial intelligence (AI) and machine learning (ML) tools to manage automated processes, develop data-driven insights, and learn over time.

smart label–A label with an embedded radio frequency identification (RFID) tag.

smart logistics–Incorporating technologies into supply chain logistics processes to increase the efficiency of logistics operations and the flow of goods.

smart materials handling–The process of automated short-distance movement of goods within a facility.

smart operations–A highly responsive, adaptive, digitized, and connected function integrated into the digital supply network that synchronizes all aspects of production and operations. This function drives significant performance and safety improvements in production, particularly in regard to quality and maintenance, repair, and overhaul (MRO).

SMED–Abbreviation for single-minute exchange of die.

smoothing–The process of averaging data by a mathematical process or by curve fitting, such as the least-squares method or exponential smoothing.

smoothing constant–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.

smoothing factor–Syn.: smoothing constant.

smoothing inventories–Inventories used when upstream production levels are less than downstream demand.

smoothing models–Another name for forecasting models that utilize moving averages. The forecast is smoothed in the sense that averages have less variability than individual periods.

SOA–Acronym for service-oriented architecture.

social responsibility–Commitment by top management to behave ethically and to contribute to community development. This may also entail improving the workforce's quality of life.

social sustainability–Syn.: social responsibility.

software–A set of programs used to direct the operation of a computer.

software-as-a-service (SaaS)–A software licensing and distribution model that provides access to applications via the internet on a subscription basis. A service provider hosts the application at its data center and customers access it through a web browser. This is often referred to as on-demand software and used by companies to avoid purchasing, implementing and maintenance costs.

sole proprietorship–A form of business in which one person has ownership and control. See: partnership.

sole source–A supply situation where the supply of a good or service is available from only one organization. Usually technical barriers, such as patents, complex tooling, or component designs, preclude other suppliers from offering the product.

sole-source supplier–See: sole source.

solid waste generated–One of the five green SCOR metrics that measures the total solid waste generated by the process.

SOP–Acronym for standard operating procedure.

sorting–The function of physically separating a homogeneous subgroup from a heterogeneous population of items.

source–The activities involved in scheduling product deliveries, receiving products, verifying products, and authorizing supplier payment. In SCOR DS, this also describes the activities associated with procuring, ordering, and transferring products or services.

source cycle time–The average amount of time associated with source stock production, make-to-order (MTO), and engineer-to-order (ETO) processes.

source document–An original written or printed record of some type that is to be converted into machine-readable form.

source execution–The ability to digitize sourcing processes to quickly assess supplier quotes and decision criteria, including comparisons with cost analytics and commodity indexes, in order to select the best suppliers. The quick screening includes self-service registration for suppliers, competitive bidding, and online negotiations.

source inspection–Inspection at the source of supply or production (e.g., the supplier or the work center) as opposed to inspection following receipt from the supplier or following transfer of the items from one work center to another.

sourcing–The process of identifying a company that provides a needed good or service.

sourcing decisions–High-level decisions regarding which products or services will be produced within a company and which will be purchased from external supply chain partners. These decisions normally are based on supplier cost and capability compared with producing the product in-house.

Southern Common Market (Mercosur)–A market and customs alliance between Argentina, Brazil, Paraguay, and Uruguay created by the Treaty of Asunción (1991).

space buffer–Physical space immediately after the constraint that can accommodate output from the constraint when there is a stoppage downstream that would otherwise force the constraint to stop also.

spare parts–Syn.: service parts.

spare parts demand–Syn.: service parts demand.

SPC–Acronym for statistical process control.

special cause–See: assignable cause.

special warranty–An assurance that the product is fit for the specific purpose for which the product will be used. See: warranty.

specialization–Producing a limited product line in order to focus on a product or a process. Specialization is often intended to improve productivity and reduce costs.

special-purpose machinery–Machines that are designed to perform a small number of activities. They are not as flexible as general-purpose machinery but they may be faster and more accurate.

specific identification–A method of keeping track of the units of the beginning inventory and the units purchased—that is, specific identification of the purchase cost of each item. This may be done through a coding method or serial number identification.

specific performance–A contract remedy requiring defendants to do what they have contracted to do.

specification–A clear, complete, and accurate statement of the technical requirements of a material, an item, or a service and of the procedure to determine if the requirements are met.

specification development–A systematic statement of the requirements to be satisfied in the supply of a product or service. The specification defines the business requirements clearly, and the requirements are communicated to suppliers to facilitate the evaluation of goods and services against the agreed specifications. See: specification standardization.

specification limits–Syn.: tolerance limits.

specification standardization–The practice of unifying and merging specifications of components or services procured to realize benefits, such as economy of scale. With such standardization, part and supplier proliferation can be reduced through the elimination of superficial, accidental, and deliberate differences between similar parts.

speculative buying–Purchasing an item not immediately needed in anticipation of a future price increase. See: buying down, hedge, hedging.

speed of design process–The time frame within which a product or service is designed to satisfy customer needs and regulations and field-tested before entering a market.

spend analysis–A purchasing activity in which an organization explores its spending patterns to identify opportunities to reduce costs or improve quality. This activity is part of value analysis as well as cost-benefit analysis.

spend management–Managing the outflow of funds in order to buy goods and services. The term is intended to encompass such processes as outsourcing, procurement, e-procurement, and supply chain management.

SPI–Acronym for schedule performance index.

spike–A significant large upward or downward movement of a value level in a short period of time.

split delivery–A method by which a larger quantity is ordered on a purchase order to secure a lower price, but delivery is divided into smaller quantities and spread out over several dates to control inventory investment, save storage space, and so forth.

split lot–A manufacturing order quantity that has been divided into two or more smaller quantities, usually after the order has been released. The quantities of a split lot may be worked on in parallel, or a portion of the original quantity may be sent ahead to a subsequent operation to be worked on while work on the remainder of the quantity is being completed at the current operation. The purpose of splitting a lot is to reduce the lead time of the order.

split-case order picking–A process for filling less-than-full case orders. It requires items to be picked from a case or other container.

spoiled work order–Syn.: rework order.

sponsor–A person who provides financial support, in cash or in kind.

spot buy–A purchase made on a one-time basis for standard off-the-shelf material or equipment.

spot demand–Short lead-time demand that is difficult to estimate. Usually supply for this demand is provided at a premium price.

spot stock warehousing–Positioning seasonal items in proximity to the market. When the season ends, these items are either disposed of or relocated to a more centralized location.

spread–Variability of an action. It is often measured by the range or standard deviation of a particular dimension.

spreadsheet–A computer application that stores and organizes data in a tabular form. These programs also typically offer a wide range of functions that can be used to analyze the data.

SPT–Acronym for shortest processing time, as in shortest processing time rule.

SQC–Acronym for statistical quality control.

SQL–Acronym for structured query language.

square root rule–A technique that assists planners with calculating the change in total safety stock needed to maintain customer service levels within a distribution network when the number of stocking locations is changed. The square root rule states that total safety stock inventories in a specified number of facilities can be approximated by multiplying the total amount of inventory in existing facilities by the square root of the ratio of the number of future facilities divided by the number of existing facilities.

SRM–Acronym for supplier relationship management.

stabilization stock–An inventory that is carried on hand above the base inventory level to provide protection against incurring overtime or downtime.

stable demand–Products that keep a similar demand pattern no matter what the season or time. Staple products fall into this category.

stacked lead time–Syn.: cumulative lead time.

staged material–Syn.: kit.

staging–Pulling material from inventory before it is required. This action is often taken to identify shortages or to undergo an additional operation such as testing or programming. Organizations should be careful that staging does not lead to increased problems with inventory availability or accuracy. See: staging and consolidation.

staging and consolidation–Physically moving material from the packing area to a staging area based on a prescribed set of instructions related to a particular outbound vehicle or delivery route, often for shipment consolidation purposes.

stakeholder–Any individual or group that has an interest that is affected or could be affected by the organization's activities. These include business partners, civil society organizations, consumers, customers, employees and other workers, managers, governments, local communities, non-governmental organizations, shareholders and other investors, suppliers, trade unions, or vulnerable groups.

stakeholder relationship management–Addressing and managing the competing priorities, needs, and concerns of internal and external stakeholders in a proactive and sustained manner, resulting in decreased cost and enhanced stakeholder acceptance or buy-in.

standard–1) An established norm against which measurements are compared. 2) An established norm of productivity defined in terms of units of output per set time (e.g., units per hour) or in standard time (e.g., minutes per unit). 3) The time allowed to perform a specific job including quantity of work to be produced. See: standard time.

standard allowance–The established or accepted amount by which the normal time for an operation is increased within an area, plant, or industry to compensate for the usual amount of personal, fatigue, and unavoidable delay times.

standard batch quantity (SBQ)–The quantity of a parent that is used as the basis for specifying the material requirements for production. The quantity per is expressed as the quantity to make the SBQ, not to make only one of the parent. This measurement is often used by manufacturers that use some components in standard quantities or by process-related manufacturers. Syn.: run size.

standard components–Components of a finished product that are easy to manufacture and are made by many suppliers, making them more of commodity to buy at low cost.

standard containers–Predetermined, specifically sized containers used for storing and moving components. These containers protect the components from damage and simplify the task of counting components.

standard cost accounting system–A cost accounting system that uses cost units determined before production for estimating the cost of an order or product. For management control purposes, the standards are compared with actual costs, and variances are computed.

standard costs–The target costs of an operation, process, or product, including direct material, direct labor, and overhead charges.

standard deviation–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.

standard error–A measurement of the variability of statistics such as the sample mean. See: estimate of error.

standard hours–Syn.: standard time.

standard industrial classification (SIC)–Classification codes that are used to categorize companies into industry groupings.

standard operating procedure (SOP)–Step-by-step instructions made by an organization to help workers carry out complex routine operations. See: standardized work.

standard output–An estimate of what should be produced given a certain level of resources. It can be stated in units per hour or units per period (day, shift, etc.).

standard practice–The means by which a wide range of organizations and supply chains have historically conducted operations. These well- established practices provide good performance but do not provide a significant cost or competitive advantage over emerging and best practices. Implementation of this type of practice involves low risk and results in acceptable performance.

standard ratio–A relationship based on a sample distribution by value for a particular company. When the standard ratio for a particular company is known, certain aggregate inventory predictions can be made (e.g., the amount of inventory increase that would be required to provide a particular increase in customer service).

standard service–Service that is the same for most customers.

standard time–The length of time that should be required to (1) set up a given machine or operation and (2) run one batch or one or more parts, assemblies, or end products through that operation. It is used in determining machine requirements and labor requirements. It assumes an average worker who follows prescribed methods and allows time for personal rest to overcome fatigue and unavoidable delays. It also is frequently used as a basis for incentive pay systems and as a basis of allocating overhead in cost accounting systems. Syn.: standard hours. See: standard.

standardization–1) The process of designing and altering products, parts, processes, and procedures to establish and use standard specifications for them and their components. 2) Reduction of the total numbers of parts and materials used and products, models, or grades produced. 3) The function of bringing a raw ingredient into standard (acceptable) range per the specification before introduction to the main process.

standardized ingredient–A raw ingredient that has been preprocessed to bring all its specifications within standard ranges before it is introduced to the main process. This preprocessing minimizes variability in the production process.

standardized product–A product that can be made in large quantities or continuously because it has very few product designs.

standardized work–A work process that is always carried out exactly the same way, preferably using the current best-known way under which the output can be achieved.

standing capacity–Syn.: rated capacity.

standing order–Syn.: blanket purchase order.

star–A slang term used to refer to a high-growth, high-profit-margin product. See: growth-share matrix.

start date–In project management, the time an activity begins. It may be defined as an actual start date or a planned start date.

start manufacture to order complete manufacture–The time from when the manufacturing of an order starts until an order is ready to be shipped to the customer.

start-to-finish–In project management, a network requirement that activity A must start before subsequent activity B can finish. See: logical relationship.

start-to-start–In project management, a network requirement that activity A must start before subsequent activity B can start. See: logical relationship.

startup–1) That period starting with the date of initial operation during which the unit is brought up to acceptable production capacity and quality within estimated production costs. 2) The activity that commences on the date of initial activity and has significant duration on most projects but is often confused (used interchangeably) with date of initial operation.

startup audit–The technique of having an implementation team tour or visit the implementation site on a frequent basis and use the management by walking around technique to identify problems and solutions.

startup cost–The extra operating cost to bring the plant or product on-stream incurred between the completion of construction and the start of normal operations. In addition to the difference between actual operating costs during that period and normal costs, startup costs include employee training, equipment tests, process adjustments, salaries and travel expenses of temporary labor staff and consultants, report writing, post-startup monitoring, and associated overhead. Additional capital required to correct plant problems may be included. Startup costs are sometimes expensed over the lifetime of the asset(s).

stateful inspection–A type of firewall used in packet filtering.

statement of cash flows–A financial statement showing the flow of cash and its timing into and out of an organization or project. Syns.: cash flow statement, funds flow statement.

statement of work–1) A description of products to be supplied under a contract. 2) In project management, the first project planning document that should be prepared. It describes the purpose, history, deliverables, and measurable success indicators for a project. It also captures the support required from the customer and identifies contingency plans for events that could throw the project off course. Because the project must be validated for management, staff, and review groups, the statement of work should be a persuasive document.

static budget–Syn.: master budget.

static inventory models–Syn.: single-period inventory models.

statistical control–The situation in which variations among the observed samples can be attributed to a constant system of chance causes.

statistical control charts–A chart on which data is collected from physical measurements or customer surveys and plotted so that conformance to specifications or customer satisfaction can be tracked and improved.

statistical inventory control–The use of statistical methods to model the demands and lead times experienced by an inventory item or group of items. Demand during lead time and between reviews can be modeled, and reorder points (ROPs), safety stocks, and maximum inventory levels can be defined to strive for desired customer service levels, inventory investments, manufacturing and distribution efficiency, and targeted returns on investments. Syn.: scientific inventory control. See: fixed order quantity (FOQ) inventory model.

statistical order point–Syn.: order point.

statistical order point system–Syn.: order point system.

statistical process control (SPC)–The application of statistical techniques to monitor and adjust an operation. This term often is used interchangeably with the term statistical quality control (SQC), although SQC includes acceptance sampling, as well as statistical process control. See: out-of-control process.

statistical quality control (SQC)–The application of statistical techniques to control quality. The practice includes acceptance sampling as well as statistical process control. However, the term is often used interchangeably with the term statistical process control.

statistical safety stock calculation–The mathematical determination of safety stock quantities considering forecast errors, lot sizes, desired customer service levels, and the ratio of lead time to the length of the forecast period. Safety stock is frequently the product of the appropriate safety factor and the standard deviation or mean absolute deviation of the distribution of demand forecast errors.

statistical thinking–The ability to draw conclusions based on data.

statute of limitations–A statute restricting the length of time in which a lawsuit may be filed.

steady state–The state occurring when the variables that define the behavior of a system or process are behaving naturally as if operating for some time. In simulations, data is not collected until after this state is reached. See: transient state.

STEEPLED analysis–A strategic planning methodology that can be used across all business functions to discover, evaluate, organize, and track external risk. STEEPLED is an acronym for social, technological, economic, environmental, political, legislative, ethical, and demographic.

STEM–Abbreviation for science, technology, engineering, and mathematics.

step budget–A budget that establishes the anticipated targets at which an operation will perform for each step or level of production. A step budget can be likened to several different fixed budgets. It is a useful budgeting method because most manufacturing overhead expenditures vary in steps, not as a straight line. See: flexible budget.

step-function scheduling–Scheduling logic that recognizes run length to be a multiple of the number of batches to be run rather than simply a linear relationship of run time to total production quantity.

stickering–Placing manufacturer- or customer-requested stickers on the boxes of the product being sent to them. This typically is done so that the customer, usually a retailer, can more effectively track its inventory. Barcoding is commonly a part of the stickering process.

stochastic models–Models in which uncertainty is explicitly considered in the analysis.

stock–1) Items in inventory. 2) Stored products or service parts ready for sale. These are different from stores, which are usually components or raw materials.

stock code–Syn.: item number.

stock dividend–A dividend paid to shareholders in stock rather than cash.

stock keeping unit (SKU)–A unique code that is used by warehouses, distribution centers (DCs), and retailers to identify and track inventory at a particular location. One product stocked at various locations may be represented by unique SKUs at each location.

stock keeping unit (SKU) rationalization–Syn.: item rationalization.

stock number–Syn.: item number.

stock order–An order to replenish stock, as opposed to a production order to make a particular product for a specific customer.

stock record card–A ledger card that contains inventory status for a given item.

stock split–The issuance of new shares to stockholders without requiring additional equity.

stock status–A report showing the inventory on hand and usually showing the inventory on order and some sales or usage history for the products it covers.

stockchase–Syn.: expedite.

stockless production–Syn.: just-in-time (JIT) manufacturing.

stockless purchasing–Buying material, parts, supplies, and so on for direct use by the departments involved, as opposed to receiving them into stores and subsequently issuing them to the departments. The intent is to reduce inventory investment, increase cash flow, reduce materials handling and storage, and provide better service. See: dock-to-stock inventory.

stockout–A lack of materials, components, or finished goods that are needed to meet demand. See: backorder.

stockout alert–A signal or notification of an item indicating a lack of inventory on hand that is required.

stockout costs–The costs associated with a stockout. Those costs may include lost sales, backorder costs, expediting, and additional manufacturing and purchasing costs.

stockout percentage–A measure of the effectiveness with which a company responds to actual demand or requirements. The stockout percentage can be a comparison of total orders containing a stockout with total orders or of line items incurring stockouts with total line items ordered during a period. One formula is stockout percentage = (1 – customer service ratio) × 100 percent. Ant.: customer service ratio.

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

stockpoint–A designated location in an active area of operation into which material is placed and from which it is taken. This represents a way of tracking and controlling active material. The stockpoint is not necessarily a stockroom isolated from activity.

stocktaking via drones–Using drones to count the stock or inventory in a given location.

stop sequence–A loading procedure in which the first stop is loaded last.

stop work order–Syn.: hold order.

storage–The retention of parts or products for future use or shipment.

storage cost–A subset of inventory carrying costs, including the cost of warehouse rent and utilities, material handling personnel, equipment maintenance, insurance, building maintenance, and security personnel.

store–A storage point located upstream of a work station, intended to make it easier to see customer requirements.

stores–1) Stored materials used in making a product. 2) The room where stored components, parts, assemblies, tools, fixtures, and so forth are kept.

stores issue order–Syn.: picking list.

stores ledger card–A card on which records of the items on hand and on order are maintained.

stores requisition–Syn.: picking list.

stowability–The ease or difficulty of loading, handling, and storing shipping items. It is used as a factor for determining shipment costs and classifying freight. It considers regulations, liability, and item characteristics (e.g., hazardous materials, excessive weight, or irregular shape).

straight loading–A method for loading several pallets in a straight line all facing the direction of the pallet stringers.

straight-line depreciation–A method of depreciation whereby the amount to be recovered (written off as an expense) is spread uniformly over the estimated life of the asset in terms of time periods. See: depreciation.

straight-line schedule–Syn.: gapped schedule.

strategic alignment–The development of supply chain partners with a commitment to the shared purpose and objectives focused on accomplishing a coordinated supply chain strategy.

strategic alliance–A relationship formed by two or more organizations that share proprietary information, participate in joint investments, and develop linked and common processes to increase the performance of both companies. Many organizations form strategic alliances to increase the performance of their common supply chain.

strategic benchmarking–Benchmarking how others compete. This often involves benchmarking across industries. See: benchmarking.

strategic business unit (SBU)–An approach to strategic planning that develops a plan based on products. A company's products are typically grouped into SBUs, with each SBU evaluated in terms of strengths and weaknesses vis-à-vis similar business units made and marketed by competitors. The units are evaluated in terms of their competitive strengths, relative advantages, life cycles, and cash flow patterns.

strategic decision–A long-range plan that has a significant effect on how the organization accomplishes its mission and business strategy.

strategic deployment–See: hoshin planning.

strategic development–Continuously researching and analyzing the various available options for a particular process, and then selecting the most relevant option that aligns with the organization's strategic goals. See: strategic plan.

strategic drivers–Factors that influence business unit and manufacturing strategies.

strategic inventory positioning–The process of determining, for inventory in the supply chain or production processes, the location that will best protect the system against variability.

strategic mission–A statement of the future business scope of an enterprise. It incorporates what is being satisfied (customer needs), who is being satisfied (customer groups), and how the company creates value for the customer (processes, technologies, and core competencies).

strategic partnerships–Alliances with top supplier and buyer performers to enhance a firm's performance.

strategic performance measurements–Measurements that relate to the long-term goals of a business. Examples include profitability, market share, growth, and productivity. See: global measurements, operational performance measurement, performance objective.

strategic plan–A plan for how to marshal and determine actions to support the mission, goals, and objectives of an organization. A strategic plan generally includes an organization's explicit mission, goals, and objectives as well as the specific actions needed to achieve those goals and objectives. See: business plan, strategic planning, strategy, tactical plan(s).

strategic planning–The process of developing a strategic plan. See: operational plan, operational planning, strategic plan, tactical planning.

strategic quality planning–Weaving quality considerations into strategic business plans.

strategic sourcing–A comprehensive approach for locating and sourcing key material suppliers, which often includes the business process of analyzing total-spend-for-material spend categories. The approach includes a focus on the development of long-term relationships with trading partners who can help the purchaser meet profitability and customer satisfaction goals. From an information technology (IT) applications perspective, it includes automation of requests for quotes, requests for proposals, electronic auctioning (e-auction or reverse auction), and contract management processes.

strategic variables–The most important variables that affect the business environment and business strategy. These typically include the economic situation, population demographics, changes in technology, and government policies.

strategy–For an enterprise, identifies how the company will function in its environment. The strategy specifies how to satisfy customers, how to grow the business, how to compete in its environment, how to manage the organization and develop capabilities within the business, and how to achieve financial objectives. See: strategic plan.

stratification analysis–A statistical tool for determining root causes in which observed historical data is separated by particular characteristics to determine the effect of each characteristic upon the observed results. See: root cause analysis.

street network–A system of interconnecting lines and points representing streets and roads for a specified area. It is used to find the best routes or to create a specified service area.

strict liability–A tort doctrine requiring those engaging in very hazardous activities or those manufacturing very hazardous items be held to a high standard of conduct.

strict performance–The performance of a contract good enough for the contractor to be paid full price less the other party's losses.

structured problem-solving–A defined process applied to determine, evaluate, and resolve an identified problem. The methodology includes (1) collecting factual data, (2) defining why the situation is a problem, (3) composing a concise definition of what the problem is, (4) generating possible solutions, (5) evaluating the pros and cons of each option within the organization's objectives and feasibility, and (6) implementing the solution selected.

subassembly–An assembly that is used at the next level of the bill of material (BOM) to build another assembly.

subcontracting–Sending production work outside to another manufacturer. See: outsourcing.

subcontractor and supplier networks–Creating long-term contracts between a manufacturer and several suppliers of parts and components.

suboptimization–A solution to a problem that is best from a narrow point of view but not from a higher or overall company point of view. For example, a department manager who refuses to allow employees to work overtime in order to minimize the department's operating expense may cause lost sales and a reduction in overall company profitability.

subplant–An organizational structure within a factory consisting of a compact entrepreneurial unit that is either process-oriented or product-oriented and is structured to achieve maximum productivity.

substitutability–When a buyer can purchase similar products from different suppliers. This increases the buyer's power because the buyer doesn't have to rely on just one supplier.

substitution–The use of a nonprimary product or component, normally when the primary item is not available.

sub-tier supplier–A supplier who delivers a product to a direct supplier of the customer.

successor activity–1) In project management, in an activity-on-arrow network (AOA), the activity (arrow) that departs a node. 2) In project management, in an activity-on-node network (AON), the activity at the tip of the arrow.

sum of deviations–For any collection of data points, this is the total sum of the difference between each point in the data and the average of all the data points.

summarized bill of material (BOM)–A form of multilevel BOM that lists all the parts and their quantities required in a given product structure. Unlike the indented BOM, it does not list the levels of manufacture and lists a component only once for the total quantity used.

summarized where-used–A form of an indented where-used bill of material (BOM) that shows all parents in which a given component is used, the required quantities, and all the next-level parents until the end-item is reached. Unlike the indented where-used, it does not list the levels of manufacture.

summary judgment–A judicial ruling that no essential facts are in dispute and that one party to the suit merits judgment as a matter of law.

sunk cost–1) The unrecovered balance of an investment. It is a cost, already paid, that is not relevant to the decision being made about the future. 2) Capital already invested that for some reason cannot be retrieved. 3) A past cost that has no relevance with respect to future receipts and disbursements of a facility undergoing an economic study. This concept implies that since a past outlay is the same regardless of the alternative selected, it should not influence the choice between alternatives.

super bill of material (BOM)–A type of planning bill, located at the top level in the structure, that ties together various modular bills (and possibly a common parts bill of material (BOM)) to define an entire product or product family. The quantity per relationship of the super bill to its modules represents the forecasted percentage of demand of each module. The master-scheduled quantities of the super bill explode to create requirements for the modules that also are master scheduled. See: dynamic bill of material (BOM), pseudo bill of material (BOM).

superflush–A technique to relieve all components down to the lowest level using the complete bill of material (BOM), based on the count of finished units produced or transferred to finished goods inventory.

supermarket approach–A way of managing inventory and improving picking by making all parts easy to take off of a shelf, much like the shelves of a supermarket. Inventory is then restocked in such a way that employees always have easy access.

supervisor estimate–An estimate, made by a knowledgeable manager, of the labor required for an operation.

supervisory control and data acquisition (SCADA)–An architecture made up of computers and other devices and software that gathers data in real time from remote locations in order to control industrial processes, equipment, and conditions.

supplier–A provider of goods or services to another company. See: outside shop, vendor.

supplier advisory board–A collaborative forum for the exchange of ideas by a company with its primary suppliers. The objective of the group, often called a supplier advisory council, is to share ways that products or services can be improved, costs can be reduced, or that customer satisfaction can be increased.

supplier alternate–A seller other than the primary one. The supplier alternate may or may not supply the items purchased but is usually approved to supply those items.

supplier appraisal–The practice of identifying suitable suppliers who can meet the planned requirements. Identification methods include conducting evaluation and appraisal questionnaires, desktop research, field research, supplier visits, supplier reference checks, and asking suppliers to complete a request for information to answer questions.

supplier audit–Auditing supplier processes as part of a supplier development system.

supplier base–The group of suppliers from which a firm acquires goods and services. Syn.: supply base.

supplier certification–Certification procedures verifying that a supplier operates, maintains, improves, and documents effective procedures that relate to the customer's requirements. Such requirements can include cost, quality, delivery, flexibility, maintenance, safety, and ISO quality and environmental standards.

supplier clustering–Deliberately sole sourcing remote suppliers within a small geographical area to facilitate joint shipments of what would otherwise be less-than-truckload (LTL) quantities.

supplier collaboration–A structured and effective relationship between buyers and suppliers that provides real-time visibility into transactions (including orders, invoices and credit memos) and monitors performance metrics to reduce risks, improve performance against contract terms, and achieve negotiated savings. Syn.: collaborative supply relationship. See: supplier partnership.

supplier credit check–The practice of researching whether a supplier is financially stable in order to understand the supplier's financial solvency and bankruptcy risk. This can be accomplished through a credit check with a credit-rating agency, in which the agency collects information about the supplier from various resources and produces a score that reflects the financial stability of the supplier.

supplier debriefing–The practice of informing suppliers about the status of the tender awarding, whether the supplier is successful or not. These debriefings assure the procurement process is transparent and equitable and permits unsuccessful suppliers an opportunity to understand why their bid was not successful.

supplier development–Technical and financial assistance given to existing and potential suppliers to improve quality and/or due date performance.

supplier evaluation using robust evaluation tools–See: supplier performance evaluation.

supplier footprint–Describes the supply base for a particular material, component, or service. When stratified properly for leverage, cost impact, risk, and performance, the supply base can lead to a supplier footprint transition plan for consolidated leverage, supply-base reduction, and focused effort.

supplier lead time–The amount of time that normally elapses between the time an order is received by a supplier and the time the order is shipped. Syn.: vendor lead time. See: purchasing lead time.

supplier master data–Data that includes all relevant information about the goods and services being sourced from the suppliers, including supplier names, addresses, procurement history, supply categories, inventory data, contract records, purchasing records, and other key information about the supplier-business relationship. It may also include discounts, freight and delivery terms, currencies, payment terms, tolerances, and invoicing options for each supplier.

supplier measurement–The act of measuring the supplier's performance to a contract. Measurements usually cover delivery reliability, lead time, and price. Syn.: purchasing performance measurement. See: vendor measurement.

supplier number–A numerical code used to distinguish one supplier from another.

supplier on-time delivery performance analysis–Tracking and analyzing the delivery performance of suppliers with regard to delivery when promised. It is important to ensure that there is no consistent early receipt of raw materials or late receipts.

supplier partner–A supplier organization with which a company has formed a customer-supplier partnership. See: outpartnering.

supplier partnership–The establishment of a working relationship with a supplier organization whereby two organizations act as one. Syn.: collaborative supply relationship. See: supplier collaboration.

supplier performance evaluation–Monitoring and evaluating key suppliers on cost, quality, engineering, purchasing, and so on, based on an agreed set of measurements.

supplier performance management–The process of evaluating, monitoring, and managing a supplier's performance based on mutually defined criteria, such as reducing costs, on-time delivery, and managing risks. Syn.: supplier performance evaluation.

supplier quality assurance–The confidence that a supplier's goods or services will fulfill its customers' needs. This confidence is achieved by creating a relationship between the customer and supplier that ensures that the product will be fit for use with minimal corrective action and inspection. According to J.M. Juran, nine primary activities are needed: (1) define product and program quality requirements, (2) evaluate alternative suppliers, (3) select suppliers, (4) conduct joint quality planning, (5) cooperate with the supplier during the execution of the contract, (6) obtain proof of conformance to requirements, (7) certify qualified suppliers, (8) conduct quality improvement programs as required, and (9) create and use supplier quality ratings.

supplier registration process–The process of officially logging a supplier as a service or product provider after going through a verification process. The verification process can vary from a simple procedure of assuring that the supplier has a letter of incorporation and is licensed and registered to do business to a more complicated verification process requiring the prequalification of the supplier against a set of standards. The process systematically assures that suppliers can be issued a purchase order and that their payment can be processed through the enterprise resource planning system and payment portals.

supplier relationship management (SRM)–A comprehensive approach to managing an enterprise's interactions with the organizations that supply the goods and services the enterprise uses. The goal of SRM is to streamline and make more effective the processes between an enterprise and its suppliers. SRM is often associated with automating procure-to-pay business processes, evaluating supplier performance, and exchanging information with suppliers. An e-procurement system is often an example of an SRM family of applications.

supplier relationship management (SRM) system–An enterprise software system used to implement and manage supplier relationships, including the management of supplier-related data, such as purchases, supply contracts, and delivery dates. See: supplier relationship management (SRM).

supplier research–Reviewing the performance data of a number of suppliers in an effort to identify suitable suppliers who are able to meet the planned requirements.

supplier scheduler–A person whose main job is working with suppliers regarding what is needed and when. This person is in direct contact with both material requirements planning (MRP) and the suppliers and is responsible for doing the material planning for the items under their control, communicating the resultant schedules to their assigned suppliers, doing follow-up, resolving problems, and advising other planners and the master scheduler when purchased items will not arrive on time to support the schedule. Supplier schedulers are normally organized by commodity, as are the buyers. Using the supplier scheduler approach frees buyers from day-to-day order placement and expediting, giving them more time to do cost reduction, negotiation, supplier selection, alternate sourcing, and so forth. Syns.: planner/buyer, vendor scheduler.

supplier scheduling–A purchasing approach that provides suppliers with schedules rather than with individual hard-copy purchase orders. Normally, a supplier scheduling system will include a business agreement (contract) for each supplier, a weekly (or more frequent) schedule for each supplier extending for some time into the future, and individuals called supplier schedulers. Also required is a formal priority planning system that works well because it is essential in this arrangement to provide the supplier with valid due dates. Syn.: vendor scheduling.

supplier segmentation–A practice that organizes the relationship with suppliers by positioning them into different segments based on many parameters including transactional, preferred, strategic, or ownership relationship. Supplier segments range across a spectrum of buyer-supplier relationships such as traditional transactional suppliers, preferred suppliers, or strategic relationship suppliers.

supplier-input-process-output-customer (SIPOC) diagram–A high-level process map that shows substantial subprocesses in an organization's process together with the structure of the process represented by the suppliers, inputs, outputs, and customers. A SIPOC diagram defines the critical aspects of a process without losing the overall perspective.

supplier-managed inventory–A relationship in which the buyer maintains inventory, usually at its facility, and provides the supplier information about the amount of stock on hand. It is the responsibility of the supplier to monitor this information and send replacement items when the inventory reaches a particular level.

supplier-owned inventory–A system in which the supplier not only controls the inventory but also owns it and keeps it close to the consumer until it is purchased by the consumer. This falls within the supplier managed inventory umbrella.

supplies–Materials used generally in manufacturing that are not normally charged to any one finished production. Examples include cutting and lubricating oils, machine repair parts, glue, or tape. Syn.: indirect materials.

supply–1) The quantity of goods available for use. 2) The actual or planned replenishment of a product or component. The replenishment quantities are created in response to a demand for the product or component or in anticipation of such a demand.

supply base–Syn.: supplier base.

supply base rationalization–The practice of analyzing the number of suppliers an organization uses to determine if it is the optimum number.

supply base rightsizing–A review of the suppliers in a category to determine the ideal number. Usually this involves finding categories with too many suppliers and reducing that number by awarding the business to fewer, more preferred suppliers.

supply chain–The flow of products, information and money through a network of partners from raw material suppliers to end users.

supply chain analytics–The tools and analytical processes used to combine data from multiple systems and develop insights to improve supply chain processes and performance.

supply chain community–The set of trading partners and nominal trading partners that define a complete supply chain.

supply chain continuity–An organization's strategic and tactical capability to plan for and respond to conditions, situations, and events as necessary in order to continue supply chain operations at an acceptable predefined level.

supply chain control tower–A centralized hub that provides an integrated, complete view of data across the end-to-end supply chain. The system allows the supplier to see the requirements and inventory levels at the customer's site, enhances the ability to get accurate information about supply location and availability, and highlights any potential excess inventory. Similarly, it helps the customer easily identify supply and demand variations and take necessary actions to return excess inventory. See: digital twin.

supply chain cycle time–The time it would take to fill a customer order if inventory levels were zero. It is the sum of the longest lead times for each stage in the supply chain. See: cycle time, cycle service level.

supply chain design–The determination of how to structure a supply chain. Design decisions include the selection of partners, the location and capacity of warehouse and production facilities, the products, the modes of transportation, and supporting information systems.

supply chain efficiency curve–A graph depicting the trade-off between supply chain cost and performance for efficient supply chains, which is useful in evaluating the efficiency of a current supply chain design and informing changes to make the current design more efficient.

supply chain event management (SCEM)–A term associated with supply chain management software applications, in which users have the ability to flag the occurrence of certain supply chain events to trigger some form of alert or action within another supply chain application. SCEM can be deployed to monitor supply chain business processes such as planning, transportation, logistics, or procurement. It can also be applied to supply chain business intelligence applications to alert users to any unplanned or unexpected events. See: performance and event management system.

supply chain execution–Execution-oriented software applications for effective procurement and supply of goods and services across a supply chain. This includes manufacturing, warehouse, and transportation execution systems and systems providing visibility across the supply chain.

supply chain financing–A technology-based set of processes that link the buyer, seller, and financing institution to lower financing costs and improve business efficiency.

supply chain fixed assets–Those fixed assets associated with the costs to Orchestrate, Plan, Order, Source, Transform, Fulfill, and Return within the supply chain.

supply chain integration–When supply chain partners interact at all levels to maximize mutual benefit.

supply chain inventory visibility–Software applications that permit monitoring events across a supply chain. These systems track and trace inventory globally on a line-item level and notify the user of significant deviations from plans. Companies are provided with realistic estimates of when material will arrive.

supply chain management–The design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand, and measuring performance globally.

supply chain management object synchronization–The ability to follow an object across a supply chain through its entire life cycle. The intent is to create visibility and improve control of a supply chain item from sales to cash and to enable systems integration and digitalization.

supply chain management (SCM) system–An enterprise software system that enables a company to manage the flow of goods from the raw material state to a finished product and shipment to end users. The SCM system aligns with the enterprise resource planning (ERP) system by providing additional functionality in the areas of warehouse management, advanced planning, and transportation management.

supply chain mapping–The identification of relationships between multiple layers of upstream and downstream supply chain participants to establish total visibility of the flow of materials, products, and information through the entire supply chain.

supply chain mastery–A firm's ability to achieve superior results through exceptional management of revenue generation, segmented supplier and customer management, collaboration and information sharing, risk management, data analysis, and appropriate use of technology.

supply chain network–Trading partners within a supply chain that have established policies and structures regarding information, materials, and cash flows. In addition, they often have standards governing the flow of sourcing, operational, and logistical processes from raw materials to the end consumer. See: supply chain, supply chain network design systems.

supply chain network design systems–Systems created among all members of the supply chain in order to get all members on the same page and with the same goals in order to promote efficiency.

Supply Chain Operations Reference (SCOR) model–A process reference model developed by the Supply Chain Council and endorsed by the Association for Supply Chain Management (ASCM) as the standard cross-industry diagnostic tool for supply chain management. The SCOR model describes the business activities associated with satisfying a customer's demand, which include Orchestrate, Plan, Source, Order, Transform, Fulfill, and Return. Use of the model includes analyzing the current state of a company's processes and goals, quantifying operational performance, and comparing company performance to benchmark data. SCOR has developed a set of metrics for supply chain performance, and ASCM members have formed industry groups to collect best practices information that companies can use to evaluate their supply chain performance.

Supply Chain Operations Reference Digital Standard (SCOR DS)–A model that provides methodology, diagnostic, and benchmarking tools that help organizations make dramatic and rapid improvements in supply chain processes. SCOR DS is a part of the ASCM body of knowledge used to foster the advancement of end-to-end supply chain management.

supply chain optimization (SCO)–Using actual data or analyst projections, companies run multiple computer simulations to look for an optimal solution for business challenges, which enables top management to redesign the supply chain by as part of the enterprise`s overall strategy, typically in response to actual or anticipated changes in the marketplace.

supply chain planning–The determination of a set of policies and procedures that govern the operation of a supply chain. Planning includes the determination of marketing channels, promotions, respective quantities and timing, inventory and replenishment policies, and production policies. Planning establishes the parameters within which the supply chain will operate.

supply chain resilience–The ability of a supply chain to anticipate, create plans to avoid or mitigate, and/or to recover from disruptions to supply chain functionality. See: resilience.

supply chain revenue–Operating revenue generated from a supply chain not including non-operating revenue, such as leased real estate, investments, court settlements, or sales of office buildings.

supply chain risk–The variety of possible events and their outcomes that could have a negative effect on the flow of goods, services, funds, or information resulting in some level of quantitative or qualitative loss for the supply chain.

supply chain risk assessment–An assessment that determines where the greatest risks may exist in order to help company leaders prioritize resources for risk mitigation and management. Assessments involve clarifying the nature of a risk, understanding conditions that may lead to the event, knowing how frequently such events have happened or can be expected to happen, and the potential impact of such events.

supply chain risk management (SCRM)–The systematic identification, assessment, and mitigation of potential supply chain disruptions with the objective of reducing their negative impacts on the supply chain's performance.

supply chain risk monitoring–A formal process to continuously observe the conditions related to a risk event to identify an increase in the probability of occurrence or impact.

supply chain segmentation–The development and operation of distinct end-to-end supply chains that are optimized for the needs of each customer channel by considering product characteristics, supply capabilities, and overall business value.

supply chain strategy–An overarching plan for the design, planning, execution, control, and monitoring of supply chain activities. It is intended to guide efficient operations and initiatives that deliver on the desired key performance indicators and objectives. A supply chain strategy also specifies the function that is generally responsible for each supply chain activity as well as when collaboration among teams is needed, what needs to happen and when, and how performance will be measured.

supply chain stress testing–A rigorous analytical process of assessing plausible risks of all companies linked to a supply chain. With the objective of chain solvency now and in the future, analysis pertains to factors over which management has control, represented by a combination of financial ratios and models. Factors out of management control are forces of nature, like labor disruptions and war. Stress testing a supply chain involves quantitative methods that are fairly uniform and qualitative analysis that may vary from one situation to another.

supply chain visibility–Sharing information throughout the supply chain to create transparency among supply chain partners (e.g., the ability of supply chain partners to access demand and production information from trading partners).

supply market research–Research that enables the procurement team to understand how the supply market works, the direction it is going, the competitiveness, and the key suppliers within the supply market. The results of this analysis can help the buyer to improve and shape the strategy and tendering process and align their behavior in order achieve better value for money, reduced prices, or improved service.

supply network design–The capability to design and rationalize the supply network, optimizing for the required service level at the lowest total landed cost. This includes managing medium- and long-term capacity decisions based on strategic initiatives and financial plans while maintaining an agile supply network.

supply network planning (SNP)–Simulating and implementing comprehensive tactical planning and sourcing decisions based on a single, globally consistent model. The practice enables organizations to create a very close match between supply and demand by integrating purchasing, manufacturing, distribution, and transportation into one consistent model.

supply offset–Adjusting the timing of the application of a demand adjustment factor to account for fluctuations in demand or long lead time components. See: demand adjustment factor (DAF).

supply rate–Production rate, or quantity of units per unit of time, sent to inventory.

supply uncertainty–The risk of interruptions in the flow of components from upstream suppliers.

support costs–In activity-based cost accounting, activity costs not directly related to producing a product, such as the cost of the information system.

support functions–Activities such as accounting and information systems that do not directly participate in production but that are nevertheless essential.

Surface Transportation Board (STB)–An independent federal agency that is charged with the economic regulation of various modes of surface transportation, primarily freight rail. The STB does, however, regulate some aspects of motor carrier pricing.

surge capacity–The ability to meet sudden, unexpected increases in demand by expanding production with existing personnel and equipment.

surge tank–A container to hold output from one process and feed it to a subsequent process. It is used when line balancing is not possible or practical or only on a contingency basis when downstream equipment is nonoperational.

surplus–A situation in which an oversupply exists.

surrogate driver–In activity-based cost accounting, a substitute for the best possible driver that is useful because it is less costly and almost as accurate.

survey research–A form of research (frequently used in marketing research) in which data is collected by mailing questionnaires to a group of people within a target audience. See: marketing research.

sustainability–An organizational focus on activities that provide present benefit without compromising the needs of future generations. See: sustainable specification.

sustainable procurement strategy–A process whereby organizations meet their needs for goods and services in a way that achieves value for the organization as well as society and the economy while minimizing damage to the environment.

sustainable specification–The practice of specifying and documenting the business requirements for supply using sustainable standards. These specifications are developed to clearly define the ethical and environmental business requirements and effectively communicate these to suppliers to facilitate the evaluation of goods and services against the agreed specification. See: sustainability.

sustainable supply chain management–Managing supply chain activities to make them more environmentally friendly. See: green supply chain.

sustaining activity–In activity-based cost accounting, an activity that is not directly beneficial to any specific cost object but does benefit the organization as a whole.

SV–Acronym for schedule variance.

swap body–A type of freight container that can be interchangeably transported by either road or rail.

Swiss Cheese Model–A framework used in risk management to characterize and mitigate risks in complicated environments such as supply chains. The Swiss Cheese Model views system failures as holes in a piece of cheese, and preventative measures and barriers against the risks as slices of cheese that limit the hole from going all the way through the piece of cheese and resulting in a total system failure such as a personal accident within a facility, a transportation accident, or a supply chain disruption.

SWOT–Acronym for strengths, weaknesses, opportunities, and threats.

SWOT analysis–An analysis of the strengths, weaknesses, opportunities, and threats of and to an organization. SWOT analysis is useful in developing strategy. See: environmental scanning.

sybil attack–A computer network attack where multiple identities are created in order to attack the system's reputation.

synchronization alerts–Alerts in demand-driven material requirements planning (DDMRP) designed to highlight potential problems before they occur through expediting, rescheduling for components to coincide with parent item planned receipt, or adjusting item lead times.

synchronized planning–The capability that enables a business's strategy via planning and operational levers across the entire value network. This capability integrates strategic goals, financial objectives, and tactical supply network plans to create a connected, concurrent, and synchronized business plan. The result is faster cross-functional decision-making, better information visibility, enhanced customer service, an agile supply network, real-time collaboration with business partners, efficient resource usage, and improved financial performance.

synchronized production–A manufacturing management philosophy that includes a consistent set of principles, procedures, and techniques in which every action is evaluated in terms of the global goal of the system. Both kanban, which is a part of the just-in-time (JIT) philosophy, and drum-buffer-rope, which is a part of theory of constraints philosophy, represent synchronized production control approaches. Syn.: synchronous manufacturing. See: drum-buffer-rope (DBR), kanban, synchronous scheduling.

synchronous control–A pull-type production control system that is based on setting production rates and feeding work into production to meet the planned rates and then monitoring and controlling production.

synchronous manufacturing–Syn.: synchronized production.

synchronous scheduling–Scheduling processes (kanban in just in time and drum-buffer-rope in theory of constraints environments) that focus on synchronizing all operations to the constraint of the system. See: synchronized production.

synthetic time standard–Syn.: predetermined motion time.

system–A regularly interacting or interdependent group of items forming a unified whole toward the achievement of a goal.

system constraint–In supply chain management, the supply chain is viewed as the complete system. The system constraint is the resource at any one of the trading partners that is most limiting the end-to-end throughput of the supply chain.

system layout planning (SLP)–A facility layout methodology that develops the layout of a facility by considering the importance of proximity of each department to the other departments.

system nervousness–See: nervousness.

systems analysis–1) The analyzing in detail of the information needed for an organization, the characteristics and components of the current information system, and the requirements of any proposed changes to the information system. 2) A method of problem-solving that encompasses the identification, study, and evaluation of interdependent parts and their attributes that function in an ongoing process and that constitute an organic whole.

systems audit–The audit of any activity that can affect final product quality.

systems concept–An attempt to create the most effective complete system as opposed to the most efficient individual parts. A whole process or whole company operating system that is driven by cause and effect.

systems network–A group of interconnected nodes. This implies redundancy in connections and some means (e.g., machines) for implementing the connection.

systems rollup–Integrating computer systems. This enables faster data retrieval and better information system responsiveness.

systems thinking–A school of thought that focuses on recognizing the interconnections among the parts of a system and synthesizing them into a unified view of the whole.

systems view–A holistic approach to management that considers how actions impact the production process. Included within the system are suppliers, product design, process design, the production process, distribution, and customers.

T

tact time–Syn.: takt time.

tactical buying–The purchasing process focused on transactions and nonstrategic material buying. It is closely aligned with the ordering portion of executing the purchasing transaction process. Its characteristics include stable, limited fluctuations; defined standard specifications noncritical to production; no delivery issues; and high reliability concerning quality-standard material with very little concern for rejects. See: strategic sourcing.

tactical decision–The specific choice made about how to allocate resources and other specific steps and actions necessary to implement a tactical plan. See: tactical plan(s).

tactical plan(s)–The set of functional plans (e.g., production plan, sales plan, marketing plan) synchronizing activities across functions that specify production levels, capacity levels, staffing levels, funding levels, and so on for achieving the intermediate goals and objectives to support the organization's strategic plan. See: aggregate planning, production planning, sales and operations planning (S&OP), strategic plan, tactical planning.

tactical planning–The process of developing a set of tactical plans (e.g., production plan, sales plan, and marketing plan). Two approaches to tactical planning exist for linking tactical plans to strategic plans—production planning and sales and operations planning (S&OP). See: operational plan, operational planning, strategic planning, tactical plan(s).

Taguchi methodology–A concept of off-line quality control methods conducted at the product and process design stages in the product development cycle. This concept, expressed by Genichi Taguchi, encompasses three phases of product design: system design, parameter design, and tolerance design. The goal is to reduce quality loss by reducing the variability of the product's characteristics during the parameter phase of product development. Syn.: Taguchi methods.

Taguchi methods–Syn.: Taguchi methodology.

take-or-pay–A common clause in procurement contracts that requires the buyer to pay a portion of the agreed-upon contract amount in the form of a penalty if the buyer does not purchase the entire quantity of goods specified in the contract.

takt time–Sets the pace of production to match the rate of customer demand and becomes the heartbeat of any lean production system. It is computed as the available production time divided by the rate of customer demand. For example, assume demand is 10,000 units per month, or 500 units per day, and planned available capacity is 420 minutes per day. The takt time = 420 minutes per day ÷ 500 units per day = 0.84 minutes per unit. This takt time means that a unit should be planned to exit the production system on average every 0.84 minutes. Syn.: tact time.

tampering–Action taken to compensate for variation within the control limits of a stable system. Tampering increases rather than decreases variation, as evidenced in the funnel experiment. See: funnel experiment.

tangibles–1) Things that can be quantitatively measured or valued, such as the costs of physical assets. 2) A dimension of service quality referring to the physical appearance of the service facility, including the personnel and equipment.

tank car–A freight car with no top, a flat bottom, and fixed sides. It is used primarily for hauling bulk commodities.

tank inventory–Goods stored in tanks. These goods may be raw materials, intermediates, or finished goods. The description of inventory as tank inventory indicates the necessity of calculating the quantity on hand from the levels within the tanks.

tanker vessel–Ships of various sizes and capacities that transport liquefied freight.

tapering rate–A rate structure in which a shipping rate increases as the distance shipped increases, but the increases are not directly correlated to the increase in the distance shipped.

tardiness–For jobs that are late, the delivery date minus the due date. See: earliness, lateness.

tare weight–The weight of an empty container, obtained by deducting the net weight of the contents of the container from the gross weight of the full container.

target costing–The process of designing a product to meet a specific cost objective. Target costing involves setting the planned selling price and subtracting the desired profit as well as marketing and distribution costs, thus leaving the required manufacturing or target cost.

target inventory level–In a min-max system, the equivalent of the maximum. The target inventory is equal to the order point plus a variable order quantity. This is often called an order-up-to inventory level and is used in a periodic review system. Syn.: order-up-to level.

target market–1) A fairly homogeneous group of customers to whom a company wishes to appeal. 2) A definable group of buyers to which a marketer has decided to market.

target marketing–The process of focusing marketing activities specifically on those people who are most likely to buy a company's products and services. Data gathered about people who use the internet enables companies to identify and focus on more likely candidates.

tariff–An official schedule of taxes and fees imposed by a country on imports or exports.

task–1) In project management, the lowest level to which work can be subdivided on a project. 2) In activity-based cost accounting, a task, a subdivision of an activity, is the least amount of work. Tasks are used to describe activities.

task interleaving–Performing multiple tasks concurrently, e.g., assigning multiple picking orders to a single picker to pick concurrently or performing a cycle count of a location while picking an item.

task management–The practice of determining the resources and sequence of tasks necessary to carry out delivery processes, including aggregation and staging of products for shipment.

TBC–Abbreviation for time-based competition.

TBL–Acronym for triple bottom line.

TCO–Acronym for total cost of ownership.

TCP/IP–Acronym for transmission control protocol/internet protocol.

team design/engineering–Syn.: participative design/engineering.

teardown–All work items required between the end of one operation or job and the start of setup for the next operation or job, with both jobs requiring the same machinery or facilities. See: teardown time.

teardown bill of material (BOM)–Syn.: disassembly bill of material (BOM).

teardown time–The time needed to remove a setup from a machine or facility. Teardown is an element of manufacturing lead time, but it is often allowed for in setup or run time rather than separately. See: teardown.

technical components–Parts that are difficult to make, have long lead times, and require expert knowledge to produce. These generally are produced by only a few suppliers because of these characteristics. Tooling to produce these products usually is owned by the customer to avoid proprietary or patent issues.

technologies–The terms, concepts, philosophies, hardware, software, and other attributes used in a field, industrial sector, or business function.

technology transfer–The transmission of technology (e.g., knowledge, skills, software, and hardware) from one country, organization, business, or entity to another country, organization, business, or entity.

TEI–Acronym for total employee involvement.

telecommunications–Transmission of voice and image data at a distance by electronic means.

telescoping–Syn.: operation overlapping.

tender offer–An offer by an organization to buy a block of shares directly from shareholders of another organization.

terminal delivery allowance–A discount provided if freight is delivered to or picked up from the carrier's terminal.

terminal value–The value of an operation or entity at the end of the period considered.

terminal-handling charge–1) A carrier charge dependent on the number of times a shipment must be loaded, handled, and unloaded. Cost can be reduced by consolidating shipments into fewer parcels or by shipping in truckload quantities. 2) For shipping lines, the cost of paying container terminals for unloading and loading during shipment. These costs are borne by the shipping lines at the port of shipment or destination.

terminals–In transportation, locations where carriers load and unload goods to and from vehicles. They also are used to make connections between local pickup and delivery services and line-haul services. Functions performed in terminals include weighing connections with other routes and carriers, vehicle routing, dispatching, maintenance, paperwork, and administration. Terminals may be owned and operated by the carrier or the public.

terms and conditions–All the provisions and agreements of a contract.

terms of sale–In international trade, the element of a contract that states the delivery and payment terms between a buyer and a seller. It includes when and where the transfer of goods will occur, documentation that is required, and liabilities for both parties while the goods are in transit.

terms of trade–The portion of a contract of sale that specifies the responsibilities of the seller or exporter and the responsibilities of the buyer or importer, especially the point at which one party's responsibilities end and the other party's responsibilities begin (including the point at which title to the goods is transferred). These terms are commonly specified using International Commercial Terms (Incoterms®).

TEU–Acronym for twenty-foot equivalent unit.

theoretical capacity–The maximum output capability, allowing no adjustments for preventive maintenance, unplanned downtime, shutdown, and so forth.

theoretical cycle time–The amount of time, eliminating all stops, waiting, and additional time due to error, that is needed for one item to go through an entire process.

theory of constraints (TOC)–A holistic management philosophy developed by Dr. Eliyahu M. Goldratt based on the principle that complex systems exhibit inherent simplicity. Even a very complex system comprising thousands of people and pieces of equipment can have, at any given time, only a very, very small number of variables—perhaps only one, known as a constraint—that actually limit the ability to generate more of the system's goal.

theory of constraints (TOC) accounting–A cost and managerial accounting system that accumulates costs and revenues into three areas—throughput, inventory, and operating expense. It does not create incentives (through allocation of overhead) to build up inventory. This accounting method is considered to provide a truer reflection of actual revenues and costs than traditional cost accounting and is closer to a cash flow concept of income than traditional accounting is.
TOC accounting provides a simplified and more accurate form of direct costing that subtracts true variable costs (those costs that vary with throughput quantity). Unlike traditional cost accounting systems in which the focus is generally placed on reducing costs in all the various accounts, the primary focus of TOC accounting is on aggressively exploiting the constraint(s) to make more money for the firm. Syns.: constraint accounting, throughput accounting.

therbligs–The 17 basic movements identified by Frank and Lillian Gilbreth. (The name of the term is essentially Gilbreth spelled backwards.) Examples of movements include grasp, move, release, select, and position. See: methods study, motion study, predetermined time standards.

third-order smoothing–Syn.: triple smoothing.

third-party logistics (3PL)–A buyer and supplier team with a third party that provides product delivery services. This third party may provide added supply chain expertise. See: distribution warehouse, fourth-party logistics (4PL).

third-party logistics company–A company that manages all or part of another company's product delivery operations.

third-party transportation services–Outside firms providing transportation of goods.

third-party warehousing–The outsourcing of the warehousing function by the seller of the goods.

Thomas Register or ThomasNet® –A privately produced reference set that includes a listing of part suppliers by product type and geographic area.

threatcasting–A multidisciplinary approach to develop models of various potential futures, with the goal of anticipating when, where, and how potential threats might occur. The intent is to develop methods for detecting the evolution of threats, thus reducing their risk of occurrence, diminishing their impact, or speeding up recovery from them.

three-bin kanban–A simple kanban structure that focuses on cycling three bins of material continually and provides a visible method to align replenishment with consumption. One bin is ready to ship from the supplier at all times, while two are back to back in manufacturing or production at or near the point of use. As the front bin empties, a signal is sent to the supplier to send a full bin, and the back bin is issued forward into production. See: kanban.

three-point estimate–A project management technique that uses three cost or duration estimates to stand for the optimistic (O), most likely (M), and pessimistic (P) situations. The mean value (MV) is often found using MV = (O + 4M + P) ÷ 6. This technique can improve the accuracy of cost or duration estimates when underlying assumptions are uncertain.

threshold costs–A company's variable costs, which must be covered for a company to continue to stay in business.

throughput–1) The rate at which the system generates goal units. Because throughput is a rate, it is always expressed for a given time period, such as per month, week, day, or even minute. If the goal units are money, throughput is an amount of money per time period. In that case, throughput is calculated as revenues received minus total variable costs and then divided by units of the chosen time period. 2) In warehousing, it represents the number of goods that are moving through the warehouse at any given moment.

throughput accounting–A management accounting method based on the belief that because every system has a constraint that limits global performance, the most effective way to evaluate the impact that any proposed action will have on the system as a whole is to look at the expected changes in the global measures of throughput, inventory, and operating expense.

throughput time–See: cycle time.

tier one–The group of suppliers that is directly responsible for not only product supply but product development. See: first-tier customer, first-tier supplier.

tiered workforce–A strategy used to vary workforce levels in which additional full-time or part-time employees are hired during peak demand periods while a smaller permanent staff is maintained year-round. This technique is used heavily in perishable seasonal goods industries (e.g., chocolate production or nursery plants).

tiger team–A team that attempts to achieve a specific goal within a short time period.

time and attendance–A collection of data relating to an employee's record of absences and hours worked.

time and materials (T&M) contract–A type of contract that is a hybrid between cost-reimbursable and fixed-time contracts.

time bucket–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).

time buffer–Protection against uncertainty that takes the form of time.

time card–A document recording attendance time, often used for indicating the number of hours for which wages are to be paid. Syn.: clock card.

time fence–A policy or guideline established to note where various restrictions or changes in operating procedures take place. For example, changes to the master production schedule (MPS) can be accomplished easily beyond the cumulative lead time, while changes inside the cumulative lead time become increasingly more difficult to a point where changes should be resisted. Time fences can be used to define these points. See: demand time fence (DTF), frozen zone, hedge, planning time fence.

time period safety stock–A safety stock that is based on usage over a designated time frame. The period can be set as days, weeks, or months. Safety stock varies directly with demand. This differs from statistical-based safety stocks in that the amount is not based on deviation from demand.

time phasing–The technique of expressing future demand, supply, and inventories by time period. Time phasing is one of the key elements of material requirements planning (MRP).

time series–A set of data that is distributed over time, such as demand data in monthly time periods. Various patterns of demand—seasonal, trend, cyclical, and random—must be considered when analyzing time series data.

time series analysis–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.

time series decomposition–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.

time series forecasting–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.

time stamping–Tracking with each transaction the time of occurrence. This is used in period closings and to tie end-items to samples for certification of item properties.

time standard–The predetermined times allowed for the performance of a specific job. It often consists of two parts, one for machine setup and one for actual running. A time standard can be developed through observation of the actual work (time study), summation of standard micromotion times (predetermined or synthetic time standards), or approximation (historical job times).

time study–Timing employees as they accomplish jobs for the purpose of setting time standards.

time ticket–An operator-entered labor claim. Syn.: job ticket.

time to recovery (TTR)–The aggregate amount of time it would take a supply chain network point to become fully functional after a disruption. The total time to recover includes the amount of time required to combine suppliers' time to recovery information with the primary organization's own data to identify risk exposure for each of the network sites.

time to reliably replenish (TRR)–The time in which a part can reliably be obtained if necessary.

time utility–When a delivery gets to a customer at exactly the right time (not early or late).

time value of money–The difference in the valuation of an amount of funds at the present time and the value of that same amount of funds at a future time based on the earning power of investing the same funds at the present time at the prevailing interest rate or required rate of return. See: discount rate, discounted cash flow, present value, net present value (NPV).

time-based competition (TBC)–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.

time-based order system–Syn.: fixed order interval inventory model.

time-definite services–Delivery of goods and services when an agreement has been reached on the day and time of the delivery.

time-now date–Syn.: data date.

time-phased order point (TPOP)–A material requirements planning (MRP)–like time planning logic technique for independent demand items in which gross requirements come from a forecast, not via explosion. This method can be used to plan distribution center (DC) inventories as well as to plan for service (repair) parts because MRP logic can readily handle items with dependent demand, independent demand, or a combination of both. It is an approach that uses time periods, thus allowing for lumpy withdrawals instead of average demand. When used in distribution environments, the planned order releases are input into the master schedule dependent demand requirements. See: fixed order quantity (FOQ) inventory model.

times interest earned–Ratio of profits before payment of interest and income taxes to interest on debt.

timetables–Schedules that are organized by starting location or destination and show the times for departures and arrivals.

time-to-market–The total time required to design, build, and deliver a product (timed from concept to delivery). See: procurement lead time.

time-to-product–The total time required to receive, fill, and deliver an order for an existing product to a customer, timed from the moment that the customer places the order until the customer receives the product. See: purchasing lead time.

tipping point–The moment when something unique becomes common. The term often refers to the popular acceptance of new technologies. The concept has been applied to any process in which, beyond a certain point, the rate at which the process (chemical, sociological, environmental, etc.) proceeds increases dramatically.

TL–Acronym for truckload.

TMS–Acronym for transportation management system.

TOC–Acronym for theory of constraints.

TOC performance measures–In theory of constraints, throughput, inventory, and operating expense are considered performance measures that link operational decisions to organizational profit.

TOFC–Acronym for trailer on a flatcar.

tolerance–Allowable departure from a nominal value established by design engineers that is deemed acceptable for the functioning of the good or service over its life cycle.

tolerance limits–1) The upper and lower extreme values permitted by the tolerance. 2) In work measurement, the limits between which a specified operation time value or other work unit will be expected to vary. See: lower specification limit (LSL), upper specification limit (USL). Syn.: specification limits.

tolerance stack up–When two or more components—all within tolerance limits but at some distance from the specification itself—are assembled together, causing the assembly potentially to be subject to early failure because of the interactions among the components.

ton-mile–A way to measure the transportation of freight. It is the multiplication of weight being transported (in tons) by the distance it is being transported (in miles). It is heavily used in rail and ship transportation mode.

tool calibration frequency–The recommended length of time between tool calibrations. It is normally expressed in days.

tool issue order–Syn.: tool order.

tool number–The identification number assigned to reference and control a specific tool.

tool order–A document authorizing issue of specific tools from the tool crib or other storage. Syn.: tool issue order.

top management commitment (quality)–In the total quality management philosophy, participation of the highest-level official in the organization's quality improvement efforts. Participation includes establishing and serving on a quality committee, establishing quality policies and goals, deploying those goals to lower levels of the organization, providing the resources and training that the lower levels need to achieve the goals, participating in quality improvement teams, reviewing organization-wide progress, recognizing those who have performed well, and revising the current reward system to reflect the importance of achieving the quality goals.

total annual material receipts–The amount (in dollars) of all direct materials that were received in a calendar year. This number should fall very close to the direct material dollars that were used in a calendar year in a lean environment.

total cost analysis–In purchasing, a process by which a firm seeks to identify and quantify all of the major costs associated with various sourcing options.

total cost concept–In logistics, the idea that all logistical decisions that provide equal service levels should favor the option that minimizes the total of all logistical costs and should not be used on cost reductions in one area (such as lower transportation charges) alone.

total cost consideration–Considering all cost impacts, rather than just one cost impact, on customer service improvement.

total cost curve–1) In cost-volume-profit (breakeven) analysis, the total cost curve is composed of total fixed and variable costs per unit multiplied by the number of units provided. Breakeven quantity occurs where the total cost curve and total sales revenue curve intersect. See: break-even chart, break-even point. 2) In inventory theory, the total cost curve for an inventory item is the sum of the costs of acquiring and carrying the item. See: economic order quantity (EOQ).

total cost of ownership (TCO)–In supply chain management, the total cost of ownership of the supply delivery system is the sum of all the costs associated with every activity of the supply stream. The main insight that TCO offers to the supply chain manager is the understanding that the acquisition cost is often a very small portion of the total cost of ownership.

total cost of quality–A sum that includes costs associated with rework, scrap, warranty costs, and other costs associated with preventing or resolving quality problems.

total cost of quality curve–A curve that suggests there is some optimal quality level, denoted as Q*. The curve is calculated by adding costs of internal and external failures, prevention costs, and appraisal costs. The optimal quality level occurs when this curve reaches a minimum point. It is a single turning point curve that always has a minimum.

total cost to serve–The sum of the supply chain cost to deliver products and services to customers. It includes the cost to plan the supply chain; source materials, products, goods, merchandise, and services; produce, manufacture, remanufacture, refurbish, repair, and maintain goods and services; manage orders, customer inquiries, and returns; and deliver products and services at the agreed location (point of revenue). It comprises both direct cost and indirect cost.

total costs–Considering all cost impacts, rather than just one cost impact, on customer service improvement.

total cumulative manufacturing cycle time–Average time between a part entering a manufacturing system and completion of final packaging.

total employee involvement (TEI)–An empowerment program in which employees are invited to participate in actions and decision-making that were traditionally reserved for management.

total factor productivity–A measure of productivity (of a department, plant, strategic business unit, firm, etc.) that combines the individual productivities of all its resources, including labor, capital, energy, material, and equipment. These individual factor productivities are often combined by weighting each according to its monetary value and then adding them. For example, if material accounts for 40 percent of the total cost of sales, labor 10 percent of the total cost of sales, and other resources 60 percent, total factor productivity = .4 (material productivity) + .1 (labor productivity) + .6 (other resource productivity).

total fixed costs–Costs that remain constant in total, regardless of changes in activity.

total float–In project management, the length of time an activity can be late without delaying succeeding activities. See: float, free float, independent float.

total lead time–Syn.: lead time.

total line-haul cost–Basic costs of carrier operation to move a container of freight, including drivers' wages and usage depreciation, which vary with the distance shipped and the cost per mile.

total make cycle time–Average cumulative processing time between a part entering a manufacturing system and completion of manufacturing activities (not including packaging).

total operations synchronization–The ability to continuously schedule and allocate scarce resources to optimally execute production and operational activities based on operations command center insights to increase visibility and coordination of machines, people and processes across the network ecosystem.

total preventive maintenance–Syn.: total productive maintenance (TPM).

total procurement lead time–Syn.: procurement lead time.

total productive maintenance (TPM)–Preventive maintenance plus continuing efforts to adapt, modify, and refine equipment to increase flexibility; reduce materials handling; and promote continuous flows. It is operator-oriented maintenance with the involvement of all qualified employees in all maintenance activities. Syn.: total preventive maintenance.

total quality control (TQC)–The process of creating and producing the total composite good and service characteristics (by marketing, engineering, manufacturing, purchasing, etc.) through which the good and service will meet the expectations of customers.

total quality engineering (TQE)–The discipline of designing quality into the product and manufacturing processes by understanding the needs of the customer and performance capabilities of the equipment. See: design for quality (DFQ).

total quality management (TQM)–A management approach to quality improvement that is driven through customer satisfaction. TQM is based on the participation of all members of an organization in improving processes, goods, services, and the culture in which they work. The methods for implementing this approach are found in teachings of such quality leaders as Philip B. Crosby, W. Edwards Deming, Kaoru Ishikawa, J.M. Juran, and Genichi Taguchi. See: manufacturing philosophy.

total supply chain management cost–The total cost to manage order processing, acquire materials, manage inventory, and manage supply chain finance, planning and information technology (IT) costs, as represented as a percentage of revenue. It is calculated as: (Order Management Costs + Material Acquisition Costs + Inventory Carrying Costs + Supply Chain–related Finance and Planning Costs + Total Supply Chain–related IT Costs) ÷ Total Product Revenue.

total value analysis–A method of economic analysis in which a model expresses the dependent variable of interest as a function of independent variables, some of which are controllable.

total variable costs–Costs that vary in total in proportion to changes in activity.

total waste management (TWM)–A methodology that enables finding solutions to waste issues while keeping in mind financial elements and the business case.

touch–A statistic that is used to determine efficiency for costing or pricing functions. A touch occurs anytime a labor activity is utilized during the manufacturing or service-creation process. This concept has generated the term touch labor for direct labor personnel.

touch labor–Syn.: direct labor.

Toyota Production System (TPS)–A manufacturing methodology developed at Toyota Motor Corporation that has evolved into the concepts of just in time and lean manufacturing.

TPM–Acronym for total productive maintenance.

TPOP–Acronym for time-phased order point.

TPS–Acronym for Toyota Production System.

TQC–Acronym for total quality control.

TQE–Acronym for total quality engineering.

TQM–Acronym for total quality management.

traceability–1) The attribute allowing the ongoing location of a shipment to be determined. 2) The registering and tracking of parts, processes, and materials used in production, by lot or serial number.

tracer–A request to a transportation line to trace a shipment to expedite its movement or to verify delivery.

tracing–In activity-based cost accounting, connecting resources to activities to cost objects using underlying causal drivers to understand how costs occur during normal business activities.

tracking–The process of determining and reporting the location of a shipment throughout the supply chain channel.

tracking capacity strategy–Adding capacity in small amounts to attempt to respond to changing demand in real time in the marketplace. This approach may satisfy total demand and help minimize unit costs, but it can be difficult in some situations to add incremental amounts of capacity, especially if the facility has no more space available.

tracking signal–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.

trade bloc–An agreement between or among countries intended to reduce or remove barriers to trade within member countries. Frequently, but not always, those countries are geographically close. Examples of trade blocs are the European Economic Community and the North American Free Trade Agreement (NAFTA). Syn.: trading bloc.

trade discount–A deduction from the established price for goods or services that a manufacturer offers to resellers such as wholesalers or retailers.

trade secret–Knowledge about a manufacturing process that gives the owner an advantage over competitors who do not have it. Trade secrets are legally protectable.

trading bloc–Syn.: trade bloc.

trading company–A company that introduces foreign buyers and sellers and arranges all product export and import details, documentation, and transportation.

trading partner–Any organization external to the firm that plays an integral role within the supply chain community and whose business fortune depends on the success of the supply chain community.

trading partner agreement–A contract between trading partners that describes all facets of their business together. It is a legal and binding agreement suitable for legal purposes as well as standard working agreements.

traffic–A department or function charged with the responsibility for arranging the most economic classification and method of shipment for both incoming and outgoing materials and products.

traffic department–The area of an organization that plans and executes shipping requirements.

traffic management–Control of transportation carriers, modes, and services.

trailer on a flatcar (TOFC)–A specialized form of containerization in which motor and rail transport coordinate. Syn.: multimodal solutions, piggyback.

training aid–An item to enhance training, usually minor in nature. Training aids may include charts, graphs, slides, and schematics.

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

transactions–Individual events reported to the system (e.g., issues, receipts, transfers, or adjustments).

transfer batch–The quantity of an item moved between sequential work centers during production. See: batch, overlap quantity.

transfer price–Price that one segment (subunit, department, division, etc.) of an organization charges for a good or service supplied to another segment of the same organization.

transfer pricing–The pricing of goods or services transferred from one segment of a business to another. See: interplant transfer.

transform–The process that describes the activities associated with the scheduling and creation of products in various types of environments (like make-to-stock (MTS), make-to-order (MTO), and engineer-to-order (ETO) environments). In SCOR DS, transform is applied to production; assembly; disassembly; maintenance, repair, and operating (MRO); and services.

transformation process–The process of converting inputs into finished goods or services. In a service firm, the input may be a customer. Syn.: transformation system. See: manufacturing process, production process.

transformation system–Syn.: transformation process.

transformational leadership–Style of leadership that focuses on empowering people to identify and drive change through vision, inspiration and calls to action.

transient bill of material (BOM)–Syn.: phantom bill of material (BOM).

transient state–When the variables in a system or process have changed but not reached steady state yet. Data is usually not collected from the model until less erratic behavior emerges. See: steady state.

transit inventory–Inventory moved from one location to another. See: transportation inventory.

transit privilege–A service provided by a shipper that allows the purchasing company to stop a shipment mid-route to allow changes to the delivery but to pay the nonstop rate.

transit time–A standard allowance that is assumed on any given order for the movement of items from one operation to the next. Syn.: travel time.

translation software–Software that converts business data into an electronic data interchange standard format and vice versa.

transmission acknowledgement–A confirmation from the receiver of a transmission notifying the sender that the transmission was received error-free.

transmission control protocol/internet protocol (TCP/IP)–The communication protocol used by the internet.

transparency–The practice of a company allowing outsiders, typically customers, to see some internal information (typically regarding an order) without giving any more than the outsider requires.

transport stocks–A carrier material designed to move solids in solution or slurry or to dilute ingredients to safe levels for reaction.

transportation–The function of planning, scheduling, and controlling activities related to mode, vendor, and movement of inventories into and out of an organization.

transportation broker–A firm that matches shipments with carriers for a fee.

transportation cycle time–A logistics performance measure of the lead time required for a product to reach its final destination. It is the time between leaving a warehouse and arriving at the destination.

transportation inventory–Inventory that is in transit between locations. See: pipeline stock, transit inventory.

transportation legal classifications–Legal regulatory classification of transportation by product, shipping size, rates, carriers, and types of services.

transportation management–The process of executing requirements for the planning, scheduling, and budgeting of transportation assets, services, and related systems of the shipping process through delivery.

transportation management software–Software that is used to keep track of large volumes of shipments on a daily basis.

transportation management system (TMS)–A computer application system designed to plan, execute, and manage transportation operations. This type of application typically includes modules focused on specific functions, such as intermodal transportation, import and export management, fleet service management, and load planning and optimization.

transportation method–A linear programming model concerned with minimizing the costs involved in supplying requirements to several locations from several sources with different costs related to the various combinations of source and requirement locations.

transportation mode–The manner in which an item is transported.

transportation optimization–Evaluating the potential to change inbound or outbound transportation modes to better match supply and demand and to optimize inventory balances.

travel time–Syn.: transit time.

traveler–A copy of the manufacturing order that actually moves with the work through the shop. Syn.: shop traveler.

traveling purchase requisition–A purchase requisition designed for repetitive use. After a purchase order has been prepared for the goods requisitioned, the form is returned to the originator, who holds it until a repurchase of the goods is required. The name is derived from the repetitive travel between the originating and purchasing departments. Syn.: traveling requisition.

traveling requisition–Syn.: traveling purchase requisition.

treasury stock–Common stock that has been repurchased by the issuing company.

tree diagram–1) A management technique used to analyze a situation in increasing detail. The full range of tasks to be accomplished to achieve a primary goal and supporting subgoal may be illustrated. 2) In theory of constraints, a diagram relating effects to underlying causes. See: current reality tree (CRT), future reality tree (FRT).

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

trend analysis–An analysis to determine whether a trend (general upward or downward change) exists in data. See: trend forecasting models.

trend component–A component of demand, usually describing the impact of increasing or decreasing growth on demand. See: time series analysis, time series decomposition.

trend control chart–A control chart in which the deviation of the subgroup average (X-bar) from an expected trend in the process level is used to evaluate the stability of a process.

trend forecasting models–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.

trend-adjusted exponential smoothing forecasting–A form of exponential smoothing forecasting that includes a factor for increasing or decreasing trends in the data resulting from variables such as population growth or income changes.

triangular freight lanes–Freight trips of more than two legs used to coordinate movement of materials and goods between manufacturers, suppliers, and customers.

trigger level–Syn.: order point.

triple bottom line (TBL)–An approach that measures the economic, social, and environmental impact of an organization's activities with the intent of creating value for both its shareholders and society.

triple smoothing–A method of exponential smoothing that accounts for accelerating or decelerating trends, such as those that would be experienced in a fad cycle. Syn.: third-order smoothing.

TRR–Acronym for time to reliably replenish.

truckload (TL) carriers–Carriers that deliver/charge only for full-truckload shipments.

truckload lot–A truck shipment that qualifies for a lower freight rate because it meets a minimum weight and/or volume.

trust–A fiduciary relationship in which the trustee holds ownership for the benefit of another party (benefactor).

turnaround cost–Syn.: setup cost.

turnaround time–Syns.: setup, cycle time.

turnkey system–1) Computer packages that are already prepared by a hardware manufacturer or software house and are ready to run. 2) Any system of machines that is ready for immediate use.

turnover–1) Syn.: inventory turnover. 2) In the United Kingdom and certain other countries, annual sales volume.

turnover ratio–An indicator of whether or not a company is using its assets efficiently. It is measured by dividing sales by average assets during a particular period.

turns–Syn.: inventory turnover.

twenty-foot equivalent unit (TEU)–A measurement used to describe the carrying capacity of a cargo ship or a terminal's handling capacity. One TEU equals a standard 20-foot x 8-foot x 8-foot (length x width x height) shipping container.

TWM–Acronym for total waste management.

two-bin inventory system–A type of fixed-order system in which inventory is carried in two bins. A replenishment quantity is ordered when the first bin (working) is empty. During the replenishment lead time, material is used from the second bin. When the material is received, the second bin (which contains a quantity to cover demand during lead time plus some safety stock) is refilled, and the excess is put into the working bin. At this time, stock is drawn from the first bin until it is again exhausted. This term also is used to loosely describe any fixed-order system even when physical bins do not exist. Syn.: bin reserve system. See: visual review system.

two-card kanban system–A kanban system in which a move card and production card are employed. The move card authorizes the movement of a specific number of parts from a source to a point of use. The move card is attached to the standard container of parts during movement of the parts to the point of use. The production card authorizes the production of a given number of parts for use or replenishment. Syn.: dual-card kanban system. See: one-card kanban system.

two-level master schedule–A master-scheduling approach in which a planning bill of material (BOM) is used to master schedule an end product or family, along with selected key features (options and accessories). See: hedge, multilevel master schedule, production forecast.

type I error–An incorrect decision to reject something (such as a statistical hypothesis or a lot of products) when it is acceptable. See: producer's risk (a).

type II error–An incorrect decision to accept something when it is unacceptable. See: consumer risk (ß).

U

U chart–A control chart for evaluating the stability of a process in terms of the average count of events of a given classification per unit occurring in a sample. Syn.: count-per-unit chart.

U.S. Chemical Safety and Hazard Investigation Board (CSB)–An independent, non-regulatory federal agency that investigates significant chemical accidents in an effort to determine their underlying cause.

U.S. Customs and Border Protection (CBP)–A law enforcement agency within the U.S. Department of Homeland Security. Its primary mission is to prevent people from entering the country illegally or bringing anything harmful or illegal into the United States.

U.S. Department of Transportation (DOT)–An executive department of the U.S. federal government charged with overseeing federal transportation projects and setting safety regulations for all major forms of transportation.

U.S. Environmental Protection Agency (EPA)–An independent executive agency of the U.S. federal government tasked with developing and enforcing environmental regulations, protecting people from significant health risks, and sponsoring research about the environment.

U.S. Food and Drug Administration (FDA)–A federal agency of the department of health and human services charged with assuring foods are safe and properly labelled. The FDA also ensures that veterinary drugs and that human vaccines, biological products, and medical devices are safe and effective.

ubiquity–In inventory control, a raw material that is found at all locations.

UCL–Acronym for upper control limit.

UDE–Abbreviation for undesirable effect. Pronounced "oodee."

UEFI–Acronym for unified extensible firmware interface.

U-lines–Production lines shaped like the letter U. The shape allows workers to easily perform several nonsequential tasks without much walk time. The number of workstations in a U-line is usually determined by line balancing. U-lines promote communication.

UN Global Compact Management Model–A framework for guiding companies through the process of formally committing to, assessing, defining, implementing, measuring, and communicating the United Nations Global Compact and its principles. See: United Nations Global Compact.

unattainable capability–The portion of the production capability that cannot be attained. This is typically caused by factors such as equipment unavailability, suboptimal scheduling, or resource limitations.

unbalanced load–A shipment that is not evenly spread out on or within a piece of transportation equipment that can lead to instability and handling problems in transit because of the overloading of specific axles or wheels.

uncertainty–Unknown future events that cannot be predicted quantitatively within useful limits, such as an accident that destroys facilities, a major strike, or an innovation that makes existing products obsolete.

uncontrollable factors–In the environment of a production system, those factors that cannot be changed (e.g., temperature, natural causes, weather, or vibration).

under-capacity scheduling–Allowing more time than should be necessary to complete a day's work. As a result, a daily quota is met more often and workers have time to cross-train or perform maintenance on their tools and machines.

undertime–A condition occurring when more personnel are on the payroll than are required to produce the planned output.

undesirable effects (UDE)–In theory of constraints, those negative aspects of an environment that are noted so that a current reality tree may be constructed.

unfair labor practice–Activities by management or labor that violate the National Labor Relations Act. Failure to bargain in good faith is an example.

unified extensible firmware interface (UEFI)–The defined architecture of the platform firmware that is used to boot computer hardware.

uniform commercial code (UCC)–A comprehensive set of laws governing all commercial transactions in the United States. While not a federal law, it is uniformly adopted by most states, which allows businesses to enter into contracts with the confidence that the terms will be enforced the same way in every jurisdiction.

uniform plant loading–In lean, the distribution of work among work stations so that the time required for each station to complete all tasks is as close to equal as possible. See: line balancing.

uniform product code–A retail product numbering and barcoding system that identifies the item and the manufacturer.

uniform resource locator (URL)–A means of locating web pages regardless of where they are on the internet.

uniform warehouse receipts act–An act that regulates public warehousing. It sets up the legal responsibilities of warehouse managers and determines the receipts that can be issued.

uniform-delivered pricing–A type of geographic pricing policy in which all customers pay the same delivered price regardless of their locations. A company allocates the total transportation cost among all customers.

union contract–A formal contract between a company and the union representing its employees, usually covering two to six years, that covers all aspects of pay, working conditions, and strike options.

union free–A designation that indicates that a company or operation does not have a union contract.

union shop–A facility in which all hourly employees are unionized. More formally, it is a clause in a collective bargaining agreement under which membership in the union is required as a condition of employment. Union shops are illegal in some regions.

unit cost–Total labor, material, and overhead cost for one unit of production (e.g., one part, one gallon or one pound).

unit load–A shipping unit made up of a number of items. Bulky material is arranged or constrained so the mass can be picked up or moved as a single unit. This reduces materials handling costs. A unit load is often shrink-packed on a pallet before shipment.

unit load concept–Waiting for a container or pallet to be filled before the material is moved.

unit of driver measure–The common unit of measure used to group similar processes so comparisons can be made easily.

unit of issue–The standard issue quantity of an item from stores (e.g., pounds, each, box of 12, package of 20, or case of 144).

unit of measure–The unit in which the quantity of an item is managed (e.g., pounds, each, box of 12, package of 20, or case of 144).

unit of measure (purchasing)–The unit used to purchase an item. This may or may not be the same unit of measure used in the internal systems. For example, purchasing buys steel by the ton, but it may be issued and used in square inches. Syn.: purchasing unit of measure.

United Nations Convention on Contracts for the International Sale of Goods (CISG)–A multilateral treaty that governs the sale of goods internationally. It facilitates international trade and removes legal barriers by providing uniform rules for commercial transactions. It is sometimes known as the Vienna Convention.

United Nations Global Compact–A voluntary initiative whereby companies embrace, support, and enact, within their sphere of influence, a set of core values in the areas of human rights, labor standards, the environment, and anticorruption.

United Nations Standard Products and Services Code® (UNSPSC®)–A global, open standard for classifying products and services across sectors using a hierarchy based on segment, family, class, and commodity information.

United States-Mexico-Canada Agreement (USMCA)–A trade agreement between the three countries of North America formed in 2020, replacing the North American Free Trade Agreement (NAFTA).

unitization–The consolidation of boxes, cartons, and packages into one larger unit to make handling, identification, and transportation easier and more efficient. See: containerization, palletization.

unit-of-measure conversion–A standard conversion ratio that a company or its computer system uses to quickly enter in the amount delivered based on a known quantity within each unit of measure (e.g., a case of soda contains 24 cans).

units per transaction–A sales metric, often used in the retail sector, to measure the average number of items that customers are purchasing in a given transaction.

unit-size–To combine a number of packages into one unit by attaching them together.

units-of-production depreciation–A method of depreciation whereby the amount to be recovered (written off as a period expense) is calculated based on the estimated life of the equipment in units to be produced over the life and the number of units produced in a given time period. See: depreciation.

universal product code (UPC)–A standardized barcode symbology consisting of a unique 12-digit number that is used to identify products in retail sales channels. The barcode can be scanned at the point of sale to facilitate transaction processing and inventory management. See: model number.

universality–The strategy of designing a product initially intended for one market in such a way that it can also be sold in other markets. This is a form of standardization.

universe–The population, or large set of data, from which samples are drawn. It is usually assumed to be infinitely large or at least very large relative to the sample.

unplanned issue–An issue transaction that updates the quantity on hand but for which no allocation exists.

unplanned order–After a forecast has been developed, an unplanned order is any order outside this forecast.

unplanned receipt–A receipt transaction that updates the quantity on hand but for which no order exists.

unplanned repair–Repair and replacement requirements that are unknown until remanufacturing teardown and inspection.

UNSPSC®–Acronym for United Nations Standard Products and Services Code®.

UPC–Acronym for universal product code.

upcharges–Additional charges added to a delivered bill that were not included in the original contract. These occur because of unforeseen increases in the deliverer's cost base.

upgrade–Improvement in operating characteristics.

upper control limit (UCL)–Control limit for points above the central line in a control chart.

upper specification limit (USL)–In statistical process control, the line that defines the maximum acceptable level of random output. See: tolerance limits.

upselling–A sales strategy that encourages customers to purchase more expensive items or upgraded versions of the product they were planning to buy. Upselling can generate higher amounts of revenue from an existing customer base.

upside flexibility–The ability of a facility to increase its output and capacity to deliver for the foreseeable future in order to meet a non-forecasted increase in demand. The main drivers of this flexibility are the availability of direct labor and/or direct materials and the actual production capacity of the facility.

upside supply chain adaptability–A discrete measurement of the quantity of increased production a supply chain can achieve and sustain for 30 days.

upside supply chain flexibility–A discrete measurement of the amount of time it takes a supply chain to respond to an unplanned 20 percent increase in demand without service or cost penalty.

upstream–Used as a relative reference within a firm or supply chain to indicate moving in the direction of the raw material supplier. Ant.: downstream.

URL–Acronym for uniform resource locator.

usage–The number of units or dollars of an inventory item consumed over a period of time.

usage rate–Demand per product per unit of time.

usage variance–Deviation of the actual consumption of materials as compared with the standard.

use as is–Classification for material that has been declared to be unacceptable per the specifications yet can be used.

user interface–The portion of a computer system through which the end user interacts with the system. This may include the keyboard, mouse, touch screen, and other devices.

user-friendly–A characteristic of computer software or hardware that makes it easy for the user or operator to use the programs or equipment with a minimum of specialized knowledge or recourse to operating manuals.

U-shaped layout–A process layout in which the sequence of activities is arranged in the shape of a U. The first and last stages of the process are next to each other. This strategy is commonly used in manufacturing cells and warehouses where receiving and shipping docks are next to each other. See: work cell.

USL–Acronym for upper specification limit.

USMCA–Acronym for United States-Mexico-Canada Agreement.

utilization–1) A measure (usually expressed as a percentage) of how intensively a resource is being used to produce a good or service. This measure compares actual time used to available time. Traditionally, it is calculated as the ratio of direct time charged (run time plus setup time) to the clock time available. Utilization is a percentage between 0 percent and 100 percent that is equal to 100 percent minus the percentage of time lost due to the unavailability of machines, tools, workers, and so forth. See: efficiency, productivity. 2) In theory of constraints, activation of a resource that productively contributes to reaching the goal. Over-activation of a resource does not productively utilize a resource. 3) In warehousing, the consolidation of several units into fewer larger units to reduce handling. See: available time.

V

valid schedule–A detailed, feasible calendar of specific items flowing into and through a factory.

valuation–The technique of determining worth, typically of inventory. Valuation of inventories may be expressed in standard dollars, replacement dollars, current average dollars, or last-purchase-price dollars.

value–The worth of an item, good, or service. Value is often determined by what the customer is willing to pay.

value added–1) In accounting, the addition of direct labor, direct material, and allocated overhead assigned at an operation. It is the cost roll-up as a part goes through a manufacturing process to finished inventory. 2) In manufacturing, the actual increase of utility from the viewpoint of the customer as a part is transformed from raw material to finished inventory. It also refers to the contribution made by an operation or a plant to the final usefulness and value of a product, as seen by the customer. The objective is to eliminate all non-value-added activities in producing and providing a good or service.

value analysis–The systematic use of techniques that identify a required function, establish a value for that function, and finally provide that function at the lowest overall cost. This practice focuses on the functions of an item rather than the methods of producing the present product design.

value at risk (VAR)–The sum of the probability of risk events multiplied by the monetary impact of events. A risk event is defined as a deviation from the expected metrics value for the process. See: overall value at risk (VAR).

value chain–The functions within a company that add value to the goods or services that the organization sells to customers and for which it receives payment.

value chain analysis–An examination of all links a company uses to produce and deliver its products and services, starting from the origination point and continuing through delivery to the final customer.

value chain initiative–A process that combines software, hardware, and supply chain companies to develop an integrated system to support software sharing among diverse applications.

value delivery network–The resources and processes used to deliver a product to customers.

value engineering and/or analysis–A disciplined approach to the elimination of waste from products or processes through an investigative process that focuses on the functions to be performed and whether such functions add value to the good or service.

value index–A measure that uses the performance and importance scores for various dimensions of performance for an item or service to calculate a score that indicates the overall value of the item or service to a customer.

value of transfers–The amount transferred, in a fiscal year, from one stage of the manufacturing process to another (e.g., the amount of raw materials that are transformed into work in process (WIP)).

value perspective–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.

value stream–The processes of creating, producing, and delivering a good or service to the market. For a good, the value stream encompasses the raw material supplier, the manufacture and assembly of the good, and the distribution network. For a service, the value stream consists of suppliers, support personnel and technology, the service producer, and the distribution channel. A value stream may be controlled by a single business or a network of several businesses.

value stream map–A graph displaying the sequence of operations needed to produce and deliver a product or service.

value stream mapping (VSM)–A lean production tool to visually understand the flow of materials from supplier to customer that includes the current process and flow as well as the value-added and non-value-added time of all the process steps. It is used to help reduce waste, decrease flow time, and make the process flow more efficient and effective.

value-added network (VAN)–A network, often supporting electronic data interchange, providing services additional to those provided by common carriers.

value-added productivity per employee–A measure that is determined by three things: total output of a company, materials purchased, and total employment. It is found by subtracting materials purchased from total output and then dividing that number by total employment. This figure allows a company to understand easily how much production the typical employee is producing.

value-added reseller (VAR)–An intermediary between an original equipment manufacturer (OEM) and end customers. The VAR enhances the hardware and software it obtains from OEMs by adding value for the end customer through bundling or customization.

value-added tax (VAT)–A type of tax that is assessed incrementally and levied on the price of a product or service at each stage of production, distribution, or sale to the end consumer. The tax is carefully tracked in returns, and routes are optimized to minimize tax, duty, and value-added tax considerations. This tax is known in some countries as a goods and services tax. See: foreign/free trade zone (FTZ).

value-adding/non-value-adding–The assessment of each of the company's activities to determine if that activity adds value to the organization or its customers. If an activity is considered non-value-adding, it should be eliminated to increase an organization's efficiency.

value-based management (VBM)–The concept of satisfying customers to create shareholder wealth.

value-driven enterprise–An organization that is designed and managed to add utility from the viewpoint of the customer in the transformation of raw materials into a finished good or service.

value-of-service pricing–Allowing the market to determine the price.

valve inventory–In a just-in-time (JIT) context, inventory at a stockpoint that is too large to be located next to the point of use of the material and from which material is drawn by a pull system. It is often located at a stockpoint in the plant's receiving area.

VAN–Acronym for value-added network.

VAR–1) Acronym for value at risk. 2) Acronym for value-added reseller.

variable–A quantity that can assume any of a given set of values. Ant.: constant.

variable cost–An operating cost that varies directly with a change of one unit in the production volume (e.g., direct materials consumed or sales commissions).

variable costing–An inventory valuation method in which only variable production costs are applied to the product; fixed factory overhead is not assigned to the product. Traditionally, variable production costs are direct labor, direct material, and variable overhead costs. Variable costing can be helpful for internal management analysis but is not widely accepted for external financial reporting. For inventory order quantity purposes, however, the unit costs must include both the variable and allocated fixed costs to be compatible with the other terms in the order quantity formula. For make-or-buy decisions, variable costing should be used rather than full absorption costing. Syn.: direct costing.

variable overhead–All manufacturing costs, other than direct labor and direct materials, that vary directly with production volume. Variable overhead is necessary to produce the product but cannot be directly assigned to a specific product.

variable yield–The condition that occurs when the output of a process is not consistently repeatable in quantity, quality, or a combination of both.

variables data–Measurement information. Control charts based on variables data include average (X-bar) charts, range (R) charts, and sample standard deviations charts.

variables sampling–A type of acceptance sampling where the numerical magnitude of a characteristic is measured and recorded for each inspected unit. This type of sampling involves reference to a continuous scale of some kind.

variance–1) The difference between the expected (budgeted or planned) value and the actual value. 2) In statistics, a measurement of dispersion of data. See: estimate of error.

variation–A change in data, a characteristic, or a function that is caused by one of four factors: special causes, common causes, tampering, or structural variation.

VATI analysis–In theory of constraints, a procedure for determining the general flow of parts and products from raw materials to finished products (logical product structure). A V logical structure starts with one or a few raw materials, and the product expands into a number of different products as it flows through divergent points in its routings. The shape of an A logical structure is dominated by converging points. Many raw materials are fabricated and assembled into a few finished products. A T logical structure consists of numerous similar finished products assembled from common assemblies, subassemblies, and parts. An I logical structure is the simplest of production flows, in which resources are shared between or among different products and the flow is in a straight-line sequence (e.g., an assembly line). Once the general parts flow is determined, the system control points (gating operations, convergent points, divergent points, constraints, and shipping points) can be identified and managed.

VBM–Acronym for value-based management.

vehicle–A carrying and power unit to move goods. This includes all forms of transportation means except pipeline. The carrier generally owns or leases vehicles, but a shipper also may own or lease.

velocity–1) The rate of change of an item with respect to time. See: inventory turnover, lead time. 2) In supply chain management, a term used to indicate the relative speed of all transactions, collectively, within a supply chain community. A maximum velocity is most desirable because it indicates higher asset turnover for stockholders and faster order-to-delivery response for customers.

vendor–Any seller of an item in the marketplace. See: supplier.

vendor lead time–Syn.: supplier lead time.

vendor measurement–The act of measuring the vendor's performance to a contract. Measurements usually cover delivery reliability, lead time, quality, and price. See: supplier measurement.

vendor scheduler–Syn.: supplier scheduler.

vendor scheduling–Syn.: supplier scheduling.

vendor-managed inventory (VMI)–A means of optimizing supply chain performance in which the supplier has access to the customer's inventory data and is responsible for maintaining the inventory level required by the customer. Based upon an agreed-to service level and inventory performance objectives, the supplier monitors inventory activity and levels and plans for and replenishes its customer's inventory with minimal transactional involvement by the customer. The vendor invoices the customer based on the replenishment that occurs. See: co-managed inventory (CMI), continuous replenishment.

vendor-owned inventory (VOI)–Syns.: consigned stocks, consignment inventory.

venture team–A set of individuals assigned outside normal channels to develop ideas for new products.

vertical collaboration–The sharing of information and responsibility for supply chain planning and execution between customers and suppliers. See: vertical integration.

vertical dependency–The relationship between a parent item and a component in its bill of material (BOM) that defines the need for the component based on producing the parent, without regard to the availability of other components at the same level in the BOM. See: horizontal dependency.

vertical display–A method of displaying or printing output from a material requirements planning (MRP) system in which requirements, scheduled receipts, projected balance, and so forth are displayed vertically. Vertical displays are often used in conjunction with bucket-less systems.

vertical integration–The degree to which a firm has decided to directly produce multiple value-adding stages from raw material to the sale of the product to the ultimate consumer. The more steps in the sequence, the greater the vertical integration. A manufacturer that decides to begin producing parts, components, and materials that it normally purchases is said to be backward integrated. Likewise, a manufacturer that decides to take over distribution and perhaps sale to the ultimate consumer is said to be forward integrated. See: backward integration, forward integration.

vertical marketing–A coordinated product marketing system, with activities undertaken by one company, for a supply chain.

vertical marketing system–A marketing system that focuses on the means to reduce the traditional independence of indirect channels. The system strategically seeks to increase the integration and interdependence of channels by uniting them with common objectives and team management (e.g., franchising, cooperatives, or vertical integration).

vertical marketplace–An online marketplace connecting buyers and sellers within the same industry. It enables lower prices by lowering transaction costs.

vertical merger–An alliance of two firms in which one firm is a supplier to the other.

vertical-lift module–A part storage and retrieval system that uses vertical racks to store items and an automated storage/retrieval system to insert and retrieve those items.

vertically integrated firm–An organization with functions that were previously performed by suppliers but are now done internally. See: horizontally integrated firm.

vestibule training–A variant of job rotation in which a separate work area is set up for a trainee so that the actual work situation does not pressure the trainee. Examples are cockpit simulators and other machine simulators.

viral marketing–An advertisement that is embedded into web-based technology (e.g., email or pop-up ads) that can easily move through the internet and get in front of the target audience, who may never have seen it otherwise.

virtual agent–A software program that uses language processing and artificial intelligence (AI) to provide automated services or guidance. See: chatbot.

virtual cell–A logical rather than physical grouping of manufacturing resources. Resources in virtual cells can be dispersed throughout a facility. Product mix changes may change the layout of a virtual cell. This technique is used when it is not practical to move the equipment.

virtual corporation–The logical extension of outpartnering. With the virtual corporation, the capabilities and systems of the firm are merged with those of the suppliers, resulting in a new type of corporation in which the boundaries between the suppliers' systems and those of the firm seem to disappear. The virtual corporation is dynamic in that the relationships and structures formed change according to the changing needs of the customer.

virtual factory–A transformation process most frequently found under the virtual corporation. It involves merging the capabilities and capacities of the firm with those of its suppliers. Typically, the components provided by the suppliers are those that are not related to a core competency of the firm, while the components managed by the firm are related to core competencies. One characteristic of the virtual factory is that it can be restructured quickly in response to changing customer demands and needs.

virtual inventory system–A virtual system that enables supply chain partners to share data in a central database.

virtual organization–Short-term alliances between independent organizations in a potentially long-term relationship to design, produce, and distribute a product. Organizations cooperate based on mutual values and act as a single entity to third parties.

virtual reality (VR)–The process of using interactive, computer-generated experiences (hardware and software) that take place within a simulated environment for the purposes of training personnel or handling dangerous jobs remotely. VR technology incorporates auditory and visual feedback that helps with completing tasks or experiencing a realistic training simulation.

virtual supply chain–A collection of firms that typically exists for only a short period. Virtual supply chains are more flexible than traditional supply chains but less efficient.

virtual trading exchange–An online trading exchange that enables both information integration and collaboration among multiple trading partners.

virtual warehouse–1) The application of digital technology to provide visibility to inventory stored in multiple stocking locations and real-time decision-making tools to fulfill demand in a way that minimizes cost and maximizes service. 2) A non-physical warehouse used to designate an inventory location for a specific purpose, e.g., rework inventory that is physically in one warehouse but shows in a non-allocatable virtual warehouse.

visibility–The ability to view important information throughout a facility or supply chain no matter where in the facility or supply chain the information is located.

vision–The shared perception of the organization's future—what the organization will achieve and a supporting philosophy. This shared vision must be supported by strategic objectives, strategies, and action plans to move it in the desired direction. See: vision statement.

vision statement–An organization's statement of its vision. See: vision.

visioning–The process of developing a plan for how an organization will perform in the future.

visits–In e-commerce, the set of requests made by one user at one website. If there is no activity within a given time frame (usually 30 minutes), the visit is considered closed.

visual control–1) The control of authorized levels of activities and inventories in a way that is instantly and visibly obvious. 2) A type of activity and inventory control used in a workplace organization where everything has an assigned place and is in its place.

visual inspection–Inspection performed without test instruments.

visual management–A management system in which every metric that matters, standardized work, and improvement approaches are displayed on the shop floor and in the office.

visual review system–A simple inventory control system in which the inventory reordering is based on actually looking at the amount of inventory on hand. This is usually used for low-value items, such as nuts and bolts. See: two-bin inventory system.

vital few, useful many–A term used by J.M. Juran to describe his use of the Pareto principle in quality management, which he first described in 1950. (The principle was used much earlier in economics and inventory control methodologies.) The principle suggests that most effects come from relatively few causes — that is, 80 percent of the effects come from 20 percent of the possible causes. The 20 percent of the possible causes are referred to as the vital few; the remaining causes are referred to as the useful many. When Juran first defined this principle, he referred to the remaining causes as the trivial many, but because no problems are trivial in quality assurance, he changed it to useful many.

VMI–Acronym for vendor-managed inventory.

VOC–Acronym for voice of the customer.

VOI–Acronym for vendor-owned inventory.

voice of the customer (VOC)–Actual customer descriptions in words for the functions and features customers desire for goods and services. In the strict definition, as related to quality function deployment, the term customer indicates the external customer of the supplying entity. See: design for six sigma (DFSS), form-fit-function.

voice pick system–Syn.: pick-to-voice system.

voice-based picking–Syn.: pick-to-voice system.

volume discount–See: price break.

volume flexibility–The ability of the transformation process to quickly accommodate large variations in production levels.

volume leveraging–The strategy of buying in large quantities to take advantage of volume price or shipping discounts.

voluntary layoff–Layoffs in which the employees are given the option of taking a non-paid leave from their work for a short, specified period of time.

voucher–A written document that bears witness to, or vouches for, something. A voucher generally is an instrument that shows services performed or goods purchased and authorizes payment to the supplier.

VR–Acronym for virtual reality.

VSM–Acronym for value stream mapping.

W

Wagner-Whitin algorithm–A mathematically complex, dynamic lot-sizing technique that evaluates all possible ways of ordering to cover net requirements in each period of the planning horizon to arrive at the theoretically optimum ordering strategy for the entire net requirements schedule. See: discrete order quantity, dynamic lot sizing.

wait time–The time a job remains at a work center after an operation is completed until it is moved to the next operation. It is often expressed as a part of move time.

waiting line theory–Syn.: queuing theory.

waiver–Authorization to accept an item that, during production or upon inspection, is found to depart from specified requirements but nevertheless is considered suitable for use as is or after rework.

walkie trucks–A warehouse truck where the lift and vehicle movement are performed by electrically powered on-board battery drive motors. This type of truck may or may not have a rider. There are many forms of walkie vehicles, each with differing operational and physical configurations depending on its intended work area and task requirements.

walkthrough–Syn.: pilot test.

wall-to-wall inventory–An inventory management technique in which material enters a plant and is processed through the plant into finished goods without ever having entered a formal stock area. Syn.: four-wall inventory.

WAN–Acronym for wide area network.

wand–A device connected to a barcode reader to identify a barcode.

wandering bottleneck–An undesirable effect in which the bottleneck moves relatively frequently from one resource to another.

warehouse–A facility where goods and materials are stored in anticipation of demand or disposition.

warehouse automation–The utilization of mechanical or electronic devices to complete tasks related to storing, retrieving, and moving inventory as a substitute for labor resources. It is used for cost savings, added security, and to keep human workers out of sensitive environments.

warehouse demand–The need for an item to replenish stock at a branch warehouse.

warehouse management and transportation execution systems–Logistics information systems that initiate and control the movement of materials between supply chain partners.

warehouse management system (WMS)–A computer application system designed to manage and optimize workflows and the storage of goods within a warehouse, including receiving and storing goods, fulfilling orders, shipping, and tracking movement. It often interfaces with automated data capture, enterprise resource planning (ERP) systems, and robotics.

warehouse receiving–A key process in warehouse operations that ensures the correct product has been received, in the right quantity, in the right condition, and at the right time.

warehouse storage–The use of a building or other structure as a planned space for storing goods and materials.

warehousing–The activities related to receiving, storing, and shipping materials to and from production or distribution locations.

warranty–A commitment, either expressed or implied, that a certain fact regarding the subject matter of a contract is presently true or will be true. The word should be distinguished from a guarantee, which means a contract or promise by an entity to answer for the performance of a product or person. See: guarantee, special warranty.

warranty costs–All of the costs associated with a warranty, including shipping, receiving, repairing, replacement, and the materials needed for repair or replacement.

warranty of merchantability–An implied warranty that goods are fit for the use to which they are generally applied.

waste–1) Any activity that does not add value to the good or service in the eyes of the consumer. 2) A by-product of a process or task with unique characteristics requiring special management control. Waste production can usually be planned and somewhat controlled. Scrap is typically not planned and may result from the same production run as waste. See: hazardous waste.

waste exchange–1) Arrangement in which companies exchange their wastes for the benefit of both parties. 2) An exchange service of valuable information between generators and potential users of industrial and commercial wastes, whereby a beneficial use rather than disposal is the end result. This service identifies both the producers and potential markets for by-products, surpluses, unspent materials, and other forms of solid waste that are no longer needed.

waste hierarchy–A process that ranks waste management options according to what is most environmentally sound, giving top priority to preventing waste. The hierarchy from top to bottom is reduce, reuse, recycle, recovery, and disposal.

waterspider–An expert worker who makes the rounds of workstations and provides assistance as needed. The waterspider knows all processes well enough to take over if necessary. At Toyota Motor Corporation, this position is a prerequisite to supervision and management positions.

wave picking–A method of selecting and sequencing picking lists or items to minimize the waiting time of the delivered material. Shipping orders may be picked in waves combined by common carrier or destination, and manufacturing orders in waves related to work centers.

waybill–A document accompanying a shipment containing a list of the goods being transported, instructions related to the shipment, the shipment origin and destination, and the shipper and recipient. See: air waybill (AWB).

ways–Paths over which a carrier operates, including right-of-way, roadbed, tracks, and other physical facilities. These may be owned by the government, privately held by the carrier, or provided by nature.

wearable–A form of technology worn on the body that allows hands-free work by being voice and/or gesture activated. Wearables can be used for a wide variety of activities within a supply chain, including tracking activity levels, distances moved to execute transactions, and even the exact location of workers in the warehouse.

web directory–A list of web pages that is structured hierarchically.

web page–A document containing hypertext links to certain other documents (including multimedia documents).

web services–A common internet or intranet framework that enables the movement of data from one supply chain application to another, without the requirement for a direct connection between the two applications and without regard to the underlying operating system for those applications.

web-based return material authorization–Procedures and policies that enable customers to fill out return material authorization (RMA) forms online. The practice cuts down on the manual effort, processing time, and risk of error.

webcasting–Syn.: push technology.

weight confirmation–The process of confirming a shipment arrival only by confirming that the correct weight has been delivered.

weight distribution–The even spread of cargo weight on a trailer or other piece of transportation equipment to ensure safety and stability of the shipment while it is in transit.

weighted moving average–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.

weighted-factor rating model–A method to analyze the advantages of various locations along several qualitative and quantitative dimensions.

weighted-point plan–A supplier selection and rating approach that uses the input gathered in the categorical plan approach and assigns weights to each evaluation category. A weighted sum for each supplier is obtained, and a comparison is made. The weights used should total 100 percent for all categories. See: categorical plan.

what-if analysis–The process of evaluating alternate strategies by answering the consequences of changes to forecasts, manufacturing plans, inventory levels, and so forth. See: simulation.

what-if simulation–An approach to conducting a what-if analysis usually found in manufacturing resource planning (MRP) and enterprise resource planning (ERP) systems.

wheel chock–A wedge of sturdy material placed against a vehicle's wheel to prevent accidental movement.

where-used list–A listing of every parent item that calls for a given component, and the respective quantity required, from the bill of material (BOM). See: implosion, indented where-used list, pegging.

wholesaler–Syn.: distributor.

wide area network (WAN)–A public or private data communication system for linking computers distributed over a large geographic area.

will call–A service process that allows customers to walk up to the seller's facility and pick up the parts they have previously ordered.

WIP–Acronym for work in process.

withdrawal–1) Removal of material from stores. 2) A transaction issuing material to a specific location, run, or schedule.

withdrawal kanban–An indicator that a container can be transported between work areas.

WMS–Abbreviation for warehouse management system.

work breakdown structure–In project management, a hierarchical description of a project in which each lower level is more detailed. See: project summary work breakdown structure.

work cell–Dissimilar machines grouped together into a production unit to produce a family of parts having similar routings. See: cellular layout, cellular manufacturing, U-shaped layout.

work center–A specific production area, consisting of one or more people and/or machines with similar capabilities, that can be considered as one unit for purposes of capacity requirements planning (CRP) and detailed scheduling. Syn.: load center.

work center load evaluation–Determining the workload on work centers to identify bottlenecks in the operation and then evaluating the planned loads on these work centers.

work center master–A file that contains information about a specific work center, such as capacity information, hours worked per shift, shifts worked, utilization, and efficiency.

work center schedule–Syn.: dispatch list.

work center where-used–A listing (constructed from a routing file) of every manufactured item that is routed (primary or secondary) to a given work center.

work in process (WIP)–A good or goods in various stages of completion throughout the plant, including all material from raw material that has been released for initial processing up to completely processed material awaiting final inspection and acceptance as finished goods inventory. Many accounting systems also include the value of semi-finished stock and components in this category. Syn.: in-process inventory.

work measurement–Estimating how long it takes for an employee to produce one unit of output.

work order–1) An order to the machine shop for tool manufacture or equipment maintenance. This is not to be confused with a manufacturing order. Syn.: work ticket. 2) An authorization to start work on an activity (e.g., maintenance) or product.

work package–In project management, a deliverable at the bottom of a work breakdown structure. This may be treated as a subproject to be assigned to a project manager to plan and execute, in which case this manager will define new activities.

work rules–1) Compensation rules concerning such issues as overtime, vacation, and shift premiums. 2) Between employee and employer, job rights and obligation rules, such as performance standards, promotion procedures, job descriptions, and layoff rules. Work rules are usually a part of a union contract and may include a code of conduct for workers and language to ensure decent conditions and health standards.

work sampling–The use of random samples to determine the frequency with which certain activities are performed.

work sequence–Ordered activities performed to accomplish work.

work teams–Teams of employees formed to shepherd a particular work area or function.

work ticket–Syn.: work order.

workaround–A project management technique that provides a response to a negative risk or event that has happened. A workaround is different from a contingency plan because a workaround is not planned before the risk event occurs.

worker efficiency–A measure (usually computed as a percentage) of worker performance that compares the standard time allowed to complete a task with the actual worker time to complete it. Syn.: labor efficiency.

worker productivity–The value of total goods and services produced by an employee divided by the labor hours required to produce those goods and services.

workers' compensation–A state-administered program whereby employees are guaranteed medical coverage and replacement of earnings in case they are injured on the job, and companies are limited as to their liability for such job-related injuries. This was formerly known as workmen's compensation.

working capital–Syn.: net working capital.

working stock–Stock located in a facility that is used to fulfill demand.

workload–Syn.: load.

workplace organization–The arrangement of tools, equipment, materials, and supplies according to their frequency of use. Those items that are never used are removed from the workplace, and those items that are used frequently are located for fast, easy access and replacement. This concept extends the idea of "a place for everything and everything in its place."

workstation–The assigned location where a worker performs the job. It could be a machine or a workbench.

World Trade Organization (WTO)–The successor to the General Agreement on Tariffs and Trade (GATT) and the current international agency overseeing trade between nations.

world-class company–An organization that has reached a level of excellence because of superior products or services and customer satisfaction. Such an organization represents the best of the best.

world-class quality–A term used to indicate a standard of excellence. It describes the best of the best.

write-off–In accounting, the process of removing an asset from an organization's books through the expensing process.

WTO–Acronym for World Trade Organization.

X

X-bar chart–Syn.: average chart.

XML–Abbreviation for extensible markup language.

Y

yard management system (YMS)–A system that organizes and directs the traffic of all vehicles in the parking yards located at various industrial buildings like warehouses, distribution centers (DCs), and manufacturing plants.

yellow belt–One who has completed six sigma training in certain hands-on tools.

yellow zone–The middle-level buffer zone in drum-buffer-rope scheduling where the yellow color is used to indicate cautious situation of buffer consumption.

yield–The amount of good or acceptable material available after the completion of a process. It is usually computed as the final amount divided by the initial amount converted to a decimal or percentage. In manufacturing planning and control systems, yield is usually related to specific routing steps or to the parent item to determine how many units should be scheduled to produce a specific number of finished goods. For example, if 50 units of a product are required by a customer and a yield of 70 percent is expected, then 72 units (computed as 50 units divided by .7) should be started in the manufacturing process. Syn.: material yield. See: scrap factor, yield factor.

yield factor–A measurement of the yield of a process. For a specific process or operation, yield factor plus scrap factor equals 1. See: scrap factor, yield.

yield management–An approach commonly used by services with highly perishable products in which prices are regularly adjusted to maximize total profit.

YMS–Acronym for yard management system.

yokoten–A Japanese word meaning sharing information.

Z

zero defects–A performance standard developed by Philip B. Crosby to address a dual attitude in the workplace: People are willing to accept imperfection in some areas, while in other areas they expect the number of defects to be zero. This dual attitude has developed as a result of the conditioning that people are human, and humans make mistakes. However, the zero-defects methodology states that if people commit themselves to watching details and avoiding errors, they can move closer to the goal of zero defects. The performance standard that must be set is zero defects, not close enough.

zero inventories–Syn.: just-in-time (JIT) manufacturing.

zero-based budgeting–A budget procedure used primarily by governmental agencies in which managers are required to newly justify each budgetary expenditure as if the budget were being initiated for the first time, rather than being based on an adjustment of prior-year data.

zone–1) A warehouse location methodology that includes some of the characteristics of fixed and random location methods. Zone locations hold certain kinds of items, depending on physical characteristics or frequency of use. 2) The specific warehouse location assigned to an order picker. In picking items for an order, the stock picker gets only the items for each order that are within his or her zone. The picker then fills the next order for items from his or her zone.

zone of freedom–Legal authority for transportation companies to charge, within limits, more than their variable costs.

zone picking–A method of subdividing a picking list by areas within a storeroom for more efficient and rapid order picking. All items in a specific area of the warehouse are picked before the picker moves on to a different area or zone of the warehouse. See: batch picking, discrete order picking, order picking.

zone price–A standard product price that applies to all geographic locations within a zone.

About ASCM

The Association for Supply Chain Management (ASCM) is the global pacesetter of organizational transformation, talent development and supply chain innovation. As the largest association for supply chain, ASCM members and worldwide alliances fuel innovation and inspire accountability for resilient, dynamic and sustainable operations. ASCM is built on a foundation of worldclass APICS education, certification and career resources, which encompass award-winning workforce development, relevant content, groundbreaking industry standards and a diverse community of professionals to create a better world through supply chain.

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