BUREAU OF INDIAN STANDARDS
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Draft Indian Standard

Glossary of Terms in Supply Chain Management
(First Revision)

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FOREWORD

Formal clause will be added later.

The standard has been prepared for the guidance of all organizations to assist them in the correct interpretation of terms used in supply chain management. It is hoped that this glossary of terms will help in establishing a generally recognized usage and eliminate ambiguity and confusion that might arise from individual interpretation of terms.

This revision is carried out to update glossary of terms to cover the recent technological advancement in supply chain management.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

1. SCOPE

1.1. This standard gives definitions of terms relating to Supply Chain Management.

2. TERMS AND DEFINITIONS

2.1. **3D Printing** — Also known as additive manufacturing (AM), is the construction of a three-dimensional object from a CAD model or a digital 3D model with material being added together (such as plastics, liquids or powder grains being fused together), typically layer by layer.

2.2. **3PL** — Third-party logistics (abbreviated as 3PL, or TPL) is an organization's use of third-party businesses to outsource elements of its distribution, warehousing, and fulfilment services. These services include warehousing, inventory management, shipping and receiving, FTL and LTL freight shipping, picking, and packing, kitting and customization, reverse logistics (product returns) and eCommerce fulfilment.

2.3. **4D Printing** — Also known as 4D bioprinting, active origami, or shape-morphing systems) uses the same techniques of 3D printing through computer-programmed deposition of material in successive layers to create a three-dimensional object. However, in 4D printing, the resulting 3D shape can morph into different forms in response to environmental stimulus (humidity, temperature, voltage, etc.), with the 4th dimension being the time-dependent shape change after the printing.

2.4. 4PL — Fourth-party logistics (4PL) providers are also referred to as Lead logistics providers (LLPs), have a broad role within the supply chain. They assume many of the same roles as third-party logistics (3PL) providers but have much broader responsibility and accountability in helping the customer reach its strategic goals as a true partner with the customer, working to create a lean, cost-effective supply chain.

2.5. 80/20 Rule — Also known as the Pareto Principle, is an aphorism which asserts that 80% of outcomes (or outputs) result from 20% of all causes (or inputs) for any given event. In business, a goal of the 80-20 rule is to identify inputs that are potentially the most productive and make them the priority.

2.6. ABC Analysis — An inventory classification that ranks items based on annual usage value. Approximately 10 – 15 percent of the top ranked items accounting for 70 percent of total annual usage value are termed as "A" class items Next about 15-20 percent of the items accounts for 20 percent of total annual usage value are termed as "B". The remaining 70 percent of the items accounting for 10% of the total annual usage value are termed as "C" class items.

2.7. Acceptable quality level (AQL) — The maximum percent defective that can be considered satisfactory. The probability of accepting an AQL lot should be high. A probability of 0.95 translates to a risk of 0.05.

2.8. Acceptance of Tender — It is a document confirming the acceptance of the tender for concluding the contract.

2.9. Acceptance Sampling — A statistical measure used in quality control. It allows a company to determine the quality of a batch of products by selecting a specified number for testing. The quality of this designated sample will be viewed as the quality level for the entire group of products.

2.10. Accounts Payable — A financial obligation created by the receipt of goods and/or services, not yet paid for.

2.11. Accounts Payable Turnover (APT) — A short-term liquidity measure used to quantify the rate at which a company pays off its suppliers. Accounts payable turnover shows how many times a company pays off its accounts payable during a period.

2.12. Accounts Receivable — A financial asset created by the supply of goods and/or services, not yet paid for.

2.13. Accounts Receivable Turnover (ART) — An accounting measure used to quantify a company's effectiveness in collecting its accounts receivable, or the money owed by customers or clients. A firm that is efficient at collecting on its payments due will have a higher accounts receivable turnover ratio.

2.14. Acknowledgement — A document from a vendor to a customer verifying receipt of an order. It may also contain description of item, quantity, rate, scheduled date and terms and conditions.

2.15. Acquisition Costs — Also referred to as the cost of acquisition, is the total cost that a company recognizes on its books for property or equipment after adjusting for discounts, incentives, closing costs and other necessary expenditures, but before sales taxes.

2.16. Actual Loss — Loss on account of higher prices paid, additional taxes paid and additional freight charges paid by the purchaser on account of delay in deliveries from the contracted delivery period.

2.17. Actual Loss — Loss on account of higher prices paid, additional taxes paid and/or additional freight charges paid by the purchaser on account of delay in deliveries from the contracted delivery period.

2.18. Adaptive Forecasting — A method that uses a variety of variables to make a prediction. It provides a deeper look into changes from period to period and identifies specific patterns. This method allows businesses to focus in on a specific variables to make better decisions, and it requires automation tools that record, collect, and aggregate data in real time.

2.19. Additive Manufacturing (AM) — See 3D Printing.

2.20. Advanced Planning Systems (APSs) — A digital solution that helps manufacturers to manage production planning and shop floor scheduling to balance demand and capacity and generate achievable production schedules.

2.21. Advanced Shipping Notification (ASN) — An intimation by a supplier to a customer, at the time of shipment, notifying the details of consignment.

2.22. 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, rupees, or both, the aggregate forecast is used for sales and operations planning purposes.

2.23. Aggregate Forecasts — See Demand Forecasting

2.24. Aggregate Planning — An operational activity where annual and quarterly plans are broken down into labour, raw material, working capital, etc. requirements over a medium-range period (6 months to 18 months) to optimize resource utilization despite significant variations in demand for individual products, which arise from changes in customer orders, supply chain dynamics, and other elements.

2.25. Agile Supply Chain — Refers to the use of responsiveness, competency, flexibility, and quickness to manage how well a supply chain entity operates daily based on the real-time data to improve the overall efficiency, productivity, minimizing potential shortages and eliminating excess inventory.

2.26. Agreement — A promise and every set of promises forming the consideration for each other, is an agreement.

NOTE —The proposal or offer when accepted is a promise.

2.27. All Time Order — Last order for spares of a particular product which is in the last phases of its life cycle.

NOTE — Also referred to as life time buy. It is of such a size that the total expected future demand can be satisfied.

2.28. Analytic Hierarchy Process (AHP) — Developed by Thomas L. Saaty in the 1970s, AHP is a structured technique for organizing and analysing complex decisions, based on mathematics and psychology using a hierarchical representation of criteria and pair-wise comparison.

2.29. Annual Contract — Contract between a supplier and a customer for an year that sets pricing and other terms and conditions to help in continuous supply of goods and services.

2.30. APICS (now ASCM) — Formerly known as American Production and Inventory Control Society (APICS), currently known as the Association for Supply Chain Management (ASCM) is a not-for-profit international education organization offering certification programs, training tools, and networking opportunities to increase workplace performance. Formed in 1957, the mission of the organization is to advance end-to-end supply chain management. APICS merged with the Supply-Chain Council (SCC) in 2014, and the American Society of Transportation and Logistics (ASTL) in 2015. ASCM offers certifications such as Certified in Production and Inventory Management (CPIM), Certified in Logistics, Transportation and Distribution (CLTD), the Supply Chain Procurement Certificate (SCPC) and the Supply Chain Warehousing Certificate (SCWC).

2.31. Assemble-to-order — A business production strategy where products that are ordered by customers are produced quickly and are customizable to a certain extent, with or without a small amount of manufacturing at the delivery end.

2.32. Association for Supply Chain Management (ASCM) — See APICS

2.33. Association of Supply Chain Professionals (ASCP) — A non-profit organization to promote supply chain & logistics expertise and skills for professionals, leading policy initiatives and provide a platform for the systematic and sound growth of the profession in India.

2.34. Automated Manufacturing Planning and Control Systems (MP&CS) — Manufacturing Production Planning (MPP) is the process of developing a detailed plan and methodology for the design and production of product or service. It helps organizations make the production process as efficient as possible.

2.35. Automated Materials Handling Systems (AMHS) — Any automation that reduces or eliminates the need for humans to check-in, check-out, sort material, or to move pallets, totes and bins containing material.

2.36. Automated Storage and Retrieval System (AS/ RS) — A high density automatic mechanized storage racking system which locates, retrieves/stores the material as per the requirement enhancing the pick rate and better space utilization.

2.37. Automatic Guided Vehicle (AGV) — An automated guided vehicle or automatic guided vehicle (AGV), also called autonomous mobile robot (AMR), is a portable robot that follows along marked long lines or wires on the floor, or uses radio waves, vision cameras, magnets, or lasers for navigation. They are most often used in industrial applications to transport heavy materials around a large industrial building, such as a factory or warehouse.

2.38. Available to Promise (ATP) — The projected amount of inventory a business has in stock, ready to sell and not allocated for existing customer orders.

2.39. B2B — Business-to-business (B2B), also called B-to-B, is a form of transaction between businesses, such as one involving a manufacturer and wholesaler, or a wholesaler and a retailer. Business-to-business refers to business that is conducted between companies, rather than between a company and individual consumer.

NOTE — This is in contrast to Business–to–Consumer (B2C).

2.40. B2C — The term business-to-consumer (B2C) refers to the process of selling products and services directly between a business and consumers who are the end-users of its products or services.

NOTE — *See also* **2.39**.

2.41. B2G — Business to government (B2G) is the sale and marketing of goods and services to federal, state, or local agencies.

2.42. Backflush Costing — A costing method, in which the direct materials that are consumed are accumulated in the production flow's work in progress (WIP) cost account with variances calculated per production flow over a period. This method introduces a truly lean concept for reporting material consumption.

2.43. Backlog — Also called "Backlog of Orders" and refers to the quantity and money amount of the product which was ordered by a customer and are not shipped yet.

2.44. Backlog/Order Balance — Orders for goods and/ or services received but not yet supplied.

2.45. Backorder — A backorder is an order for a good or service that cannot be filled at the current time due to a lack of available supply. The backorder is an indication that demand for a company's product outweighs its supply. They may also be known as the company's backlog.

2.46. Backward Scheduling — A method in manufacturing products at the last possible available period before the due date. The order starts with a planned receipt date or due date the one which is usually defined upon the customer's order and then working backward, the resources and materials are allocated to the order, and then determine the latest time to start.

2.47. Bank Guarantee — Undertaking by a bank on behalf of a supplier to a buyer that it will be responsible for the debt of the supplier in consideration of the buyer forgoing payment of the deposit or security.

2.48. Bar Code — A computer recognizable code that stores information in the form of a series of black thick and thin parallel lines that represent binary digits.

NOTE — It is normally a 13-digit code: the first digit represents the general product category, the next six digits the manufacturer's identification number and the last six the product identification number. The code does not include price.

2.49. Barcode (One-dimensional and Two-dimensional Barcodes) — A barcode or bar code is a method of representing data in a visual, machine-readable form. Barcodes represent data by varying the widths and spacings of parallel lines, which are referred to as linear or one-dimensional (1D) barcodes. Two-dimensional (2D) barcodes use rectangles, dots, hexagons, and other patterns, called matrix codes or 2D barcodes.

2.50. Barge — A large boat with a flat platform used for carrying bulk cargo.

2.51. Basic Price — A price excluding various taxes, duties, cess, surcharge and freight.

2.52. Batch (Production) — A lot or a given quantity processed/manufactured at the same time with the same process parameters.

2.53. Benchmarking — The practice of comparing business processes and performance metrics to industry bests and best practices from other companies. Dimensions typically measured are quality, time, and cost. Benchmarking is used to measure performance using a specific indicator (cost per unit of measure, productivity per unit of measure, cycle time of x per unit of measure or defects per unit of measure) resulting in a metric of performance that is then compared to others. Also referred to as "best practice benchmarking" or "process benchmarking".

2.54. Best Before Date — Time by which a product is recommended to be used to ensure the planned Quality level.

NOTE — Also known as use by date.

2.55. Beyond Economic Repair (BER) — Where the projected cost of repair, normally for a repairable or rotable item, exceeds a management set percentage of the replacement value of the item concerned.

2.56. Bid — A legally binding offer to sell or to buy. In public procurement, a bid is confidential/sealed and is opened at a pre-scheduled time, date and place.

2.57. Bid Deposit — An amount required to be submitted in the form of Banker's Cheque/Bank Guarantee or any other approved government instrument, by a supplier to a buyer along with the bid which guarantees that the bidder will accept the contract if awarded or else get the deposit forfeited.

2.58. Bid Security — A security provided to the procuring entity by bidders for securing the fulfilment of any obligation in terms of the provisions of the bidding document.

NOTE — It is also known as earnest money.

2.59. Bidder — One who submits a response to an invitation for bid (IFB) or request for quotations (RFQ).

2.60. Big Data — A term that describes large, hard-to-manage volumes of data – both structured and unstructured – that inundate businesses on a day-to-day basis. The characteristics of big data are volume, variety, velocity, and veracity. Advanced data analytics methods are used to extract value from big data.

2.61. Bill of Exchange — Unconditional signed order in writing by one to another, requiring the person to whom it is addressed to pay on demand or at a fixed or determinable future time a certain sum in money to order or to bearer (Uniform Negotiable Instruments Law).

2.62. Bill of Lading (B/L) — A Sea carrier's contract and receipt for goods agreeing to transport these goods from one place to another and to deliver to a designated recipient (consignee). NOTE — Such a document issued by Air Carrier is called Airway Bill.

NOTE — Such a document issued by Air Carrier is called Airway Bill.

2.63. Bill of Material — A list of quantities and description of all materials required to produce a unit of the finish goods.

2.64. Bill of Materials (BOM) — An extensive list of raw materials, components, and instructions required to construct, manufacture, or repair a product or service.

2.65. Bin — An inventory shelf or rack location with a specific identifier.

2.66. Bin Card — Stock card detailing the receipts, issues and closing stock of the item stored in a particular bin.

NOTE — It may also contain details of next higher assembly (NHA), alternate part numbers/issue in lieu, unit rate and supplier.

2.67. Bitcoin — A decentralized digital currency, without a central bank or single administrator, that can be sent from user to user on the peer-to-peer bitcoin network without the need for intermediaries.

2.68. Blanket Order — A commitment to a supplier for supplying certain goods or services over a predetermined period of time at predetermined prices, or at prices to be determined based on market or other conditions.

2.69. Blockchain — A system in which a record of transactions made in bitcoin, or another cryptocurrency are maintained across several computers that are linked in a peer-to-peer network.

2.70. Bluetooth Sensor — Also known as "Bluetooth Low Energy (BLE)" sensor is a small transmitter that broadcast signals to close portable devices using BLE technology used in warehouse and logistics management.

2.71. Bonded Warehouse — A warehouse in which goods are stored until duties are paid or goods are otherwise properly released.

NOTE — Such warehouse are used for the storage and custody of imported or taxed merchandise which is subject to duty or goods to be reshipped without entry.

2.72. Book Inventory — The quantity or value of inventory obtained from inventory records rather than by actual count.

2.73. Bottlenecks — A point of congestion in a production system (such as an assembly line or a computer network) or anywhere in the supply chain that occurs when workloads arrive too quickly for the process to handle. The inefficiencies brought about by the bottleneck often creates delays and higher costs.

2.74. Breach of Contract — A failure to perform any promise(s), which forms a part of a contract.

2.75. Breach of Warranty — Failure of good and/or services to meet the quality or other specifications warranted by the supplier.

2.76. Break Bulk — Disaggregation of a big lot into smaller lots.

2.77. Break Even Point — Level of production or the volume of sales at which revenue equals cost.

2.78. Breakeven Analysis (BEA) — A tool that tells how many units of a product must be sold to cover the fixed and variable costs of production. The break-even point is considered a measure of the margin of safety.

2.79. Brownfield Site — Site on which there has been previous development, for example, a factory or other building.

2.80. Brownfield Site — Site on which there has been previous development, for example, a factory or other building.

2.81. Buffer Stock — Quantity of goods or articles kept in storage to safeguard against unforeseen short-ages due to variation in lead time and/or demands.

2.82. Bulk Buying — Also known as bulk purchasing (or "mass buying") is the purchase of much larger quantities than the usual, for a unit price that is lower than the usual.

2.83. Bulk Contracts — Also known as "Bulk Rate Contracts" means one or more contracts which are entered into by the Association for the provision of utility services or other services of any kind or nature to the Lots and/or Condominium Units. The services provided under Bulk Rate Contracts may include, without limitation, security services, trash pick-up services, propane service, natural gas service, landscape maintenance services, cable television services, telecommunications services, internet access services, "broadband services", wastewater services, and any other services.

2.84. Bulk Material — Material in loose form, not having a definitive shape, without specific packaging.

NOTES

1. It is generally handled by conveyor or pumps and is measured by weight or volume.
2. Examples of bulk materials include coal, oil, sand, pig iron, limestone, liquids and gases.

2.85. Bullwhip Effect — Also known as the "Forrester effect" is defined as the demand distortion that travels upstream in the supply chain from the retailer through to the wholesaler and manufacturer due to the variance of orders which may be larger than that of sales.

2.86. Bundle Pricing — Selling of two or more products as a bundle for a price lower than the sum of the individual product prices.

2.87. Bureau of Transportation Statistics (BTS) — BTS Is a part of the United States Department of Transportation (DOT), compiles, analyses, and makes accessible information on the nation's transportation systems; collects information on intermodal transportation and other areas as needed; and improves the quality and effectiveness of DOT's statistical programs through research, development of guidelines, and promotion of improvements in data acquisition and use.

2.88. Business Intelligence (BI) — Refers to the procedural and technical infrastructure that collects, stores, and analyses the data produced by a company's activities. BI is a broad term that encompasses data mining, process analysis, performance benchmarking, and descriptive analytics. BI parses all the data generated by a business and presents easy-to-digest reports, performance measures, and trends that inform management to aid decision making.

2.89. Business Process Re–engineering (BPR) — Systematic reviewing of the activities carried out by an enterprise to substantially improve performance by focusing on the steps in each business process, which add value to the final customer.

NOTE — BPR aims to eliminate non-value –adding activities and reduce process costs and cycle times.

2.90. Business–to–Business (B2B) — A type of commerce transaction that exists between businesses such as those involving a manufacturer and whole seller or a whole seller and retailer.

NOTE — This is in contrast to Business–to–Consumer (B2C).

2.91. Business–to–Consumer (B2C) — A type of commerce transaction that exists between a business and end customer/consumer/user.

NOTE **—** See also 2.42.

2.92. By–product — Goods obtained or produced as a residual part during the production process of other goods.

NOTE — For example, Coaltar is the by product or process of obtaining gas from coal.

2.93. Cannibalization of Demand — Also known as “market cannibalization,” refers to a phenomenon that happens when there’s a decreased demand for a company’s original product in favour of its new product. When cannibalization occurs, the business experiences losses not just in sales volume but also in revenue and market share. Due to cannibalization, some companies opt not to release their new products because they don’t want the market share of their existing products to decline.

2.94. Cannibalize — To retrieve usable parts from an equipment, for its alternate use.

NOTE — It is normally resorted to when the equipment is Beyond Economic Repairs.

2.95. Capacity Constrained Resources (CCRs) — A resource that limits the total throughput generated by the organization. CCRs may not be active all the time, but they have potential to become active at any time. A CCR can be raw material, machine, material handling equipment, transport carrier, warehouse, talent, IT infrastructure, etc.

2.96. Capacity Cushion — The amount of spare capacity a business has expressed as a percentage of the total capacity. The capacity can refer to any business activity such as production capacity, staff capacity, web traffic etc., to deal with peak demands for the activity.

2.97. Capacity Report — A document to assess the technical and financial capacity of the supplier to execute the contract for the purpose of registration of the supplier.

2.98. Cap-and-trade System — See Emissions Trading Scheme (ETS)

2.99. Carbon Tax — A tax levied on the carbon emissions required to produce goods and services. Carbon taxes are intended to make visible the "hidden" social costs of carbon emissions. Carbon taxes are thus a type of Pigouvian tax. As of 2019, carbon taxes have been implemented or scheduled for implementation in 25 countries, while 46 countries put some form of price on carbon, either through carbon taxes or emissions trading schemes.

2.100. Carrying Cost — A measure, usually expressed as a percentage, of the costs incurred to hold inventory including insurance, obsolescence, theft/pilferage, damage, deterioration, warehousing charges, etc.

2.101. Carrying Costs — Also known as “holding cost,” carrying cost is the total of all expenses related to storing unsold goods. The total includes intangibles like depreciation and lost opportunity cost as well as warehousing costs. A business' inventory carrying costs generally total about 20% to 30% of its total inventory costs.

2.102. Cartage — A charge made for hauling and transferring goods, usually on a local basis. Also called drayage.

2.103. Cartel —A group of suppliers of a commodity who join together and agree to limit the supply of the commodity and charge an agreed-upon price by the group.

2.104. Cash Discount — A discount offered to encourage prompt payment.

2.105. Cash in Advance (CIA) — A payment method in which full payment is made prior to the providing of the goods and/or services.

2.106. Cash on Delivery (COD) — A payment method in which full payment is made upon delivery of goods and/or services.

2.107. Cash-to-cash (C2C) Cycle — Also known as "Cash Conversion Cycle (CCC)" Is the time period between when a business pays cash to its suppliers for inventory and receives cash from its customers. The concept is used to determine the amount of cash needed to fund ongoing operations and is a key factor in estimating financing requirements and liquidity risk.

2.108. Catalogue — Information system about supply items which tailors and distills information to the various catalogue users needs.

NOTE — It may be presented in hard copy reports, microfiche or online about supply items with catalogue number, item name, description, application and part number to facilitate access to the various catalogue users.

2.109. Causal Forecasting Methods — see Demand Forecasting.
Causal Models — The most sophisticated and complex forecasting tool for businesses that uses specific information about relationships between variables affecting demand in the market, such as competitors, economic forces, and other socioeconomic factors. As with time series analyses, historical data is key to creating a causal model forecast.

2.110. Certificate of Compliance — A document executed by a competent person verifying to the effect that the goods or services in question meet the specified requirements.

NOTE — Also known as certificate of conformance and certificate of conformity.

2.111. Certificate of Conformance — Signed document provided by a supplier to a customer which verifies that the goods supplied conform to the customer's specified requirements.

NOTE — This is usually on a standard form that accompanies a delivery of goods.

2.112. Certificate of Damage — A certificate issued by the carrier when goods delivered to the consignee by them are in damaged condition.

NOTE — The document is needed by the consignee/consignor to initiate claims.

2.113. Certificate of Inspection — A document certifying that merchandise was in good condition immediately prior to shipment.

2.114. Change Order — A purchaser's authorization to the supplier to modify or change an existing purchase order.

2.115. Circular Economy — A model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. A circular economy entails markets that give incentives to reusing products, rather than scrapping them and then extracting new resources. In such an economy, all forms of waste, such as clothes, scrap metal and obsolete electronics, are returned to the economy or used more efficiently.

2.116. Circular Transition Indicators (CTIs) — Developed by the World Business Council for Sustainable Development (WBCSD) is a simple, objective, and quantitative framework that can be applied to businesses of all industries, sizes, value chain positions and geographies to achieve circular economy.

2.117. Closed Loop Supply Chains — Closed Loop Supply Chain Management (CLSCM) refers to all forward logistics in the chain (such as procurement of materials, production, and distribution) as well as the reverse logistics to collect and process returned (used or unused) products and/or parts of products to ensure sustainability and circular economy.

2.118. Closing Stock — An amount of on-hand stock at the end of a period, often determined by a physical stock check.

2.119. Cloud Computing — A general term for anything that involves delivering hosted services over the internet. Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each location being a data centre.

2.120. Codification — A System of providing a unique identification number.

NOTE — It could contain classification, category, size, type, manufacture's source, etc, to provide a tool for supply management.

2.121. Collaborative Autonomous Mobile Robots (AMRs) — Robots that are designed to work with and around people for handling and transporting materials within and between zones inside a traditional warehouse environment with a flexible interface for multiple payload options that can be used for various applications.

2.122. Collaborative Planning, Forecasting, and Replenishment (CPFR) — An approach which aims to enhance supply chain integration by supporting and assisting joint practices. CPFR seeks cooperative management of inventory through joint visibility and replenishment of products throughout the supply chain. Information shared among the supply chain partners aids in planning and satisfying customer demands. This allows for continuous updating of inventory and upcoming requirements, making the end-to-end supply chain process more efficient. Efficiency is created through the decrease expenditures for merchandising, inventory, logistics, and transportation across all trading partners.

2.123. Combined Distribution Centres (CDCs) — A distribution centre ships orders in bulk to retailers or wholesalers while fulfilment centres are designed for packing single orders shipped to an individual end user. CDCs are consolidation of distribution and fulfilment centres into one often using latest Industry 4.0 technologies.

2.124. Competitive Bidding — A process asking bidders to submit their technical and commercial offers indicating prices and other specified details.

2.125. Compound Annual Growth Rate (CAGR) — The rate of return (RoR) that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each period of the investment's life span.

2.126. Computer-aided Design (CAD) — Use of computers to aid in the creation, modification, analysis, or optimization of a design to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing.

2.127. Computer-aided Engineering (CAE) — A broad usage of computer software to aid in engineering analysis tasks that includes finite element analysis, computational fluid dynamics, multibody dynamics, durability, and optimization.

2.128. Computer-aided Manufacturing (CAM) — Also known as "Computer-aided Machining" is the use of software to control machine tools and related ones in the manufacturing of work pieces.

2.129. Computer-aided Process Planning (CAPP) — The use of computer technology to aid in the process planning of a part or product, in manufacturing. CAPP is the link between CAD and CAM in that it provides for the planning of the process to be used in producing a designed part.

2.130. Computer-integrated Manufacturing (CIM) — The manufacturing approach of using computers to control entire production process. This integration allows individual processes to exchange information with each part. Manufacturing can be faster and less error-prone by the integration of computers.

2.131. Confirmed Letter of Credit — A letter of credit, issued by the buyer's bank, whose validity has been confirmed by the seller's bank.

> NOTE — A supplier is assured of payment on completion of specified conditions given in the confirmed letter of credit. Generally, it is known as irrevocable letter of credit without recourse.

2.132. Consignee — The person or organization to whom the goods are shipped.

2.133. Consignment — A lot of goods shipped at one time.

2.134. Consignment Note — A document used to confirm receipt of goods by a carrier to forward these to the consignee given thereon. It also shows description of goods, weight/volume, freight rate and name of carrier.

NOTE — For inland transportation by road, it is normally termed as Lorry Receipt (L/R).

2.135. Consignment Stocks — An inventory of goods held by either with the supplier or with the customer but remaining the property of the supplier until issued for use to the customer at which point payment becomes due.

2.136. Consignor — The person or organization who ships a consignment.

NOTE — Generally, for international and domestic trade, 20 feet and 40 feet long standard containers are used. For shipment by air, standard LD 3 containers are used

2.137. Consolidation — Combining a number of smaller shipments to form an economic shipment lot.

NOTE — It is done to achieve economies of scale in transportation through lower freight rates.

2.138. Consumer Packaged Goods (CPG) — Also known as "Fast-moving Consumer Goods (FMCG)" are products that are sold quickly and at a relatively low cost. Examples include non-durable household goods such as packaged foods, beverages, toiletries, candies, cosmetics, over-the-counter drugs, dry goods, and other consumables.

2.139. Consumer's Risk — A potential risk found in all consumer-oriented products, that a product not meeting quality standards will pass undetected through the manufacturer's quality control system and enter the consumer marketplace.

2.140. Container — A large pre-fabricated metal box, with fixed dimensions designed for the purpose of safe handling, transportation and storage of goods.

2.141. Continuous Replenishment Programs (CRPs) — Inventory is continuously tracked, and an order for a lot size Q is placed when the inventory declines to the reorder point (ROP).

2.142. Contract — An agreement with free consent between two or more individuals or organizations for a set of promises giving rise to obligations which can be enforced or recognized by law.

2.143. Contract Manufacturer — A manufacturer that contracts with a firm for components or products, is a form of outsourcing. A contract manufacturer performing packaging operations is called copacker or a contract packager.

2.144. Contract Price Adjustment — A clause in contract allowing the price to be varied according to a formula during the life of the contract based on the rates of labour, material and energy indices at a particular point of time.

2.145. Control Tower — A supply chain control tower is defined as a connected, personalized dashboard of data, key business metrics and events across the supply chain. A supply chain control tower enables organizations to understand, prioritize and resolve critical issues in real time more fully. The control tower uses real-time data to identify weaknesses and strengths within the supply chain, using predictive analytics to guide the network toward greater efficiency and improved processes.

2.146. Convenience Store — A convenience store, convenience shop, corner store, or corner shop is a small retail business that stocks a range of everyday items such as coffee, groceries, snack foods, confectionery, soft drinks, tobacco products, lottery tickets, over-the-counter drugs, toiletries, newspapers, and magazines. A convenience store may also be called a cold store, party store (Michigan), bodega (New York City), tienda de barrio (Latin America), carry out, mini-market, mini-mart, konbini (Japan), corner shop, deli or milk bar (Australia), dairy (New Zealand), superette (New Zealand and parts of the US), corner store (many parts of English-speaking Canada and New England), depanneur or dep (In parts of Canada).

2.147. Corporate Social Responsibility (CSR) — A form of international private business self-regulation which aims to contribute to societal goals of a philanthropic, activist, or charitable nature by engaging in or supporting volunteering or ethically-oriented practices.

2.148. Cost of Quality — A measure that sums all costs associated with poor quality or product failure, including rework, scrap, warranty costs and other costs incurred in preventing or resolving quality problems.

2.149. Cost Performance Index (CPI) — A method for calculating the cost efficiency and financial effectiveness of a specific project through the following formula: CPI = earned value (EV) / actual cost (AC). A CPI ratio with a value higher than 1 indicates that a project is performing well budget-wise.

2.150. Cost Plus — Pricing method whereby the purchaser agrees to pay the supplier for goods/services an amount incurred by the supplier plus a percentage of cost incurred or fixed sum.

2.151. Costs of Quality (COQ) — A methodology that allows an organization to determine the extent to which its resources are used for activities that prevent poor quality. COQ has two components: "Costs of good quality" (appraisal costs, prevention costs), and "cost of poor quality" (Internal failure costs and external failure costs). Having such information allows an organization to determine the potential savings to be gained by implementing process improvements.

2.152. Council of Supply Chain Management Professionals (CSCMP) — The Council of Supply Chain Management Professionals (CSCMP) is the leading global association for supply chain management professionals with nine thousand members worldwide receive networking opportunities, cutting-edge research, and online and on-site professional educational opportunities. Offers SCPro™ Certification which is a three-tiered program.

2.153. Counter Offer — Alternate offer made in response to an offer from another party.

2.154. Countervailing Duty (**CVD**) — An additional custom tariff applied to import of goods to maintain parity in lieu of the excise duty being charged on indigenous production of similar goods.

2.155. Country of Origin — The country where goods are wholly grown or manufactured or produced or the last country in which the goods undergo substantial value addition.

NOTE — Many countries levy varying import duties rates according to the country of origin.

2.156. Credit Note — A document for agreeing to pay a specified amount on account of any difference in the obligation as per the contract.

NOTE — Such instances may include short supply, quality defect, error in invoice, special rebate or returned goods, etc.

2.157. Crisis Management — Managing crises in difficult situations such as natural disasters, manmade crisis, dispute crisis, raw materials crisis, parts short-supply, energy crisis etc, disrupting the flow of goods, money, and information.

2.158. Critical Chain Project Management (CCPM) — A method of planning and managing projects that emphasizes the resources (people, equipment, physical space) required to execute project tasks developed by Eliyahu M. Goldratt. It differs from more traditional methods that derive from critical path and PERT algorithms, which emphasize task order and rigid scheduling. A critical chain project network strives to keep resources levelled and requires that they be flexible in start times.

2.159. Critical Customer Requirement (CCR) — A practice adopted to transform the customer requirements into design or product requirements using tools such as CTQ (Critical to Quality), CTP (Critical to Process), Quality Function Deployment (QFD), Key Process Input Variables (KPIVs), Key Process Output Variables (KPOV) and SIPOC matrix (Supplier, Inputs, Process, Outputs and Customer).

2.160. Cross Docking — A practice in logistics of unloading materials from a manufacturer or mode of transportation directly to the customer or another mode of transportation, with little or no storage in between. This may be done to change the type of conveyance, to sort material intended for different destinations, or to combine material from different origins into transport vehicles (or containers) with the same or similar destinations.

2.161. Cross-border Trade — Refers to the flow of goods and services across the international borders between jurisdictions which is part of normal legal trade that flows through standard export/import frameworks of nations.

2.162. Customer Acquisition Cost (CAC) — Cost of winning a customer to purchase a product or service. As an important unit economic, customer acquisition costs are often related to customer lifetime value (CLV). With CAC, any company can gauge how much they're spending on acquiring each customer.

2.163. Customer Experience (CX) — Customer experience is a totality of cognitive, affective, sensory, and behavioural consumer responses during all stages of the consumption process including pre-purchase, consumption, and post-purchase stages.

2.164. Customer Lifetime Value (CLV) — The total worth to a business of a customer over the whole period of their relationship. It's an important metric as it costs less to keep existing customers than it does to acquire new ones, so increasing the value of your existing customers is a great way to drive growth.

2.165. Customer Order Decoupling Point (CODP) — A term describing the process or node in the supply chain network where the activities are triggered by individual orders. CODP is an important supply chain design parameter in Vendor Managed Inventory (VMI), Package-to-Order (PTO), Assemble-to-Order (ATO), Configure-To-Order (CTO) etc.

2.166. Customer Relationship Management (CRM) — A process in which a business administers its interactions with customers, typically using data analytics to study large amounts of information. CRM systems compile data from a range of different communication channels, including a company's website, telephone, email, live chat, marketing materials and more recently, social media. They allow businesses to learn more about their target audiences and how to best cater for their needs, thus retaining customers and driving sales growth. CRM may be used with past, present, or potential customers.

2.167. Customs Duty — Tariff levied on imports or exports of goods.

2.168. Cyber-physical systems (CPS) — Also known as intelligent system, is a computer system in which a mechanism is controlled or monitored by computer-based algorithms. In cyber-physical systems, physical and software components are deeply intertwined, able to operate on different spatial and temporal scales, exhibit multiple and distinct behavioural modalities, and interact with each other in ways that change with context. CPS is also like the Internet of Things (IoT), sharing the same basic architecture but CPS presents a higher combination and coordination between physical and computational elements. Examples of CPS include smart grid, autonomous automobile systems, medical monitoring, industrial control systems, robotics systems, and automatic pilot avionics.

2.169. Cycle Counting — A method of checks and balances by which companies confirm physical inventory counts match their inventory records. This method involves performing a regular count and recording the adjustment of specific products. Stores and warehouse managers and supply chain professionals often prepare the plan for staff to audit inventory which leads to minimal transaction error rates and high stock record accuracy.

2.170. Cycle Inventory — Also known as cycle stock inventory, is the portion of inventory that a seller cycles through to fulfil regular sales orders which represents a part of a business's standing inventory.

2.171. Cycle Service Level (CSL) — Also known simply as service level, is an indicator of the probability of having enough stock to meet demand.

2.172. Cycle Time — The total time required to complete a transformation from one status to another.

NOTE — Total cycle time is composed of many elements. Often broken into active (running or operating) time and idle (queue or wait) time.

2.173. D2C — An abbreviation of direct-to-consumer. A company produces products in its own facility, as well as distributes it within its own channels such as an e-commerce platform, social media, and a retail store.

2.174. Damages — Compensation payable for loss or injury suffered by one party as a result of the breach of contract by the other party.

2.175. Dangerous Goods — Goods which have been determining for a particular note to be a risk to the safety.

> NOTE — For example, a sharp long knife is determining to be a dangerous goods if carried on person during a travel whereas it is allowed to be carried in a registered package in an aircraft. Synonymous with hazardous materials.

2.176. Data Envelopment Analysis — A nonparametric method in operations research and economics for the estimation of production frontiers. It is used to empirically measure productive efficiency of decision-making units (DMUs) used for benchmarking the performance metrics of operations management.

2.177. Data Governance Policy — A set of rules that help safeguard data, and establishes standards for its access, use, and integrity. The policies are typically accompanied by standards, which provide more detailed rules for implementation of the policy. A data governance policy is a critical component of a data governance framework. It guides a company's decisions about data assets. The framework creates a structure for carrying out data-related activities, and the data governance policy provides guidelines for activities that involve data.

2.178. Data Lake — A system or repository of data stored in its natural/raw format, both structured and unstructured which is transformed for tasks such as reporting, visualization, advanced analytics, and machine learning.

2.179. Data Mining — A process of extracting and discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database systems.

2.180. Data Warehousing — Also known as an enterprise data warehouse (EDW), is a system of central repositories of integrated data from one or more sources, to store current and historical data in one single place used for reporting and data analysis and is considered a core component of business intelligence.

2.181. Days of Inventory (DOI) — Also known as "Inventory Days of Supply", "Days Inventory Outstanding" or the "Inventory Period" is an efficiency ratio that measures the average number of days the company holds its inventory before selling it.

2.182. Days of Payables (DOP) — Also known as "days payable outstanding" is an efficiency ratio that measures the average number of days a company takes to pay its suppliers.

2.183. Days of Receivables (DOR) — The number of days that an invoice will remain outstanding before it's collected.

2.184. Debit Note — A document for creating a charge on the other party for difference in obligations as per the contract.

NOTE — Such instances may include excess supply, error in invoice, special charges, etc.

2.185. Decision Support System (DSS) — An information system that supports business or organizational decision-making activities.

2.186. Decision Tree Analysis — The process of drawing a decision tree, which is a graphic representation of various alternative solutions that are available to solve a given problem, to determine the most effective courses of action.

2.187. Deemed Exports — Shipments in which the goods are supplied within the country against orders, which would otherwise need to be imported from other countries or shipments for designated projects, which have been given deemed export status by the Government.

2.188. Deferred Payment Letter of Credit — A letter of credit that specifies payment after a fixed number of days after the shipment.

2.189. Deliverable State — A state within the meaning of the Sale of Goods Act when they are in such a state that the buyer would, under the contract, be bound to take delivery of them.

2.190. Delivery Drones — An unmanned aerial vehicle (UAV) used to transport packages, medical supplies, food, or other goods. Delivery drones are typically autonomous.

2.191. Delivery Lead Time — Time elapsed for delivery of goods from the time an order is received by the supplier upto the time goods are delivered to the customer/carrier.

2.192. Delivery Note — A document listing the details of the shipment sent along with the consignment to the consignee.

2.193. Delivery Order — A document issued by the owner of goods instructing the warehouse/dock/wharf etc to issue specific items to the specified entity.

2.194. Delivery Schedule — The required time(s) of delivery of goods or services as per the contract/ purchase order.

2.195. Demand Forecast — The prediction, projection or estimation of expected demand over a specified time period in future.

2.196. Demand Forecasting — The process of making estimations about future customer demand over a defined period, using historical data and other information.

2.197. Demand Oriented MRP (DOMRP) — A formal multi-echelon planning and execution method to protect and promote the flow of relevant information through the establishment and management of strategically placed decoupling point stock buffers combining some of the aspects of Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP).

2.198. Demand Planning — A supply chain management process of forecasting the demand for products to ensure they can be delivered to customers by striking a balance between having sufficient inventory levels to meet customer needs without having a excess inventory.

2.199. Demand Pull System — A customer-initiated material movement technique which permits a downstream function to pull material from the preceding function or external supplier only when it is needed and not when it is scheduled to be moved.

2.200. Demurrage — An amount charged by a party to compensate for the detention of its equipment, facilities, wagon or container or truck or warehouse in excess of allowable time.

2.201. Dependent Demand — The demand for component parts, raw materials, or sub-assemblies which does not occur until there is demand for a parent item, which is typically a product, and is usually calculated through a material requirement planning (MRP) system.

2.202. Design Chain Operations Reference Model (DCOR) — The DCOR-model has been developed by Association for Supply Chain Management (ASCM) to describe the business activities associated with all phases of satisfying a customer's demand for a product, containing several sections, and is organized around the five primary management processes of Plan, Research, Design, Integrate and Amend.

2.203. Design for Decomposition — Designing products such as apparel for decomposition in nature after the product is discarded resulting in less pollution.

2.204. Design for Manufacturing and Assembly (DFMA) — A combination of two methodologies, Design for Manufacture (DFM), which means the design for ease of manufacture of the parts that will form a product, and Design for Assembly (DFA), which means the design of the product for ease of assembly.

2.205. Design of Experiments (DOE) — A systematic method to determine the relationship between factors affecting a process and the output of that process to find cause-and-effect relationships. This information is needed to manage process inputs and process parameters to optimize the output.

2.206. Despatch Note — A document handed over to the forwarder while dispatching the goods, by the sender giving details of the addressee and of the addressor.

2.207. Develop-to-order — A type of manufacturing where a product is designed from customer requirements involving R&D, engineered, and produced after an order has been received and with the close engagement with the customer.

2.208. Digital Procurement — The application of disruptive technologies that enable Strategic Sourcing (S2C: Source-to-Contract) to become predictive, Transactional Procurement (P2P: Procure-to-Pay) to become automated, and Supplier Risk Management (SRM) to become proactive.

2.209. Digital Supply Chain — A set of processes that use advanced technologies such as Industry 4.0 technologies to gain better insights into the functions of each stakeholder along the chain to let each participant make better decisions about the sources of materials they need, the demand for their products and all the relationship in between.

2.210. Digital Supply Network (DSN) — DSN establishes a "digital thread" through physical and digital channels, connecting information, goods, and services in powerful ways, to capture signals and data from the physical world to create a digital twin.

2.211. Digital Twin — A virtual simulation model of a real supply chain that is used to analyse supply chain dynamics and predict process success with real-time data of planned and released work orders, sales orders, pending approvals, demand, and supply.

2.212. Dimensional Weight — The weight calculated based on total area/volume divided by a certain number for the purpose of calculation of freight.

> NOTE — Also called volumetric/measurement weight. The carrier charge for freight based on the dimensional weight or actual gross weight whichever is higher.

2.213. Direct Material — Material used in production which becomes part of the end product itself.

2.214. Direct Store Delivery (DSD) — A term used to describe a method of delivering products from a supplier or distributor directly to a retail store, thereby bypassing a retailer's distribution centre.

2.215. Discovery Driven Planning (DDP) — A practical tool invented by Rita McGrath and Ian MacMillan that acknowledges the difference between planning for a new venture and planning for a more conventional line of business based on the assumptions that managers make about the possible futures on which new businesses are based.

2.216. Distribution Channel (DC) — Distribution channels include wholesalers, retailers, distributors, and the Internet. In a direct distribution channel, the manufacturer sells directly to the consumer. Indirect channels involve multiple intermediaries before the product ends up in the hands of the consumer.

2.217. Distribution Requirements Planning (DRP) — A systematic process to make the delivery of goods more efficient by determining which goods, in what quantities, and at what location are required to meet anticipated demand with a goal to minimize shortages and reduce the costs of ordering, transporting, and holding goods.

2.218. Documentary Bill — The term used to indicate a set of bills of exchange, given to a merchant for goods sent abroad including bill of lading, invoices for goods and for policy of marine insurance.

2.219. Documents Against Acceptance (**D/A**) — A document containing instructions given by a shipper to a bank indicating the documents required for transferring title of goods should be delivered to the buyer (or drawer) only upon the buyer's acceptance.

2.220. Documents Against Payment (**D/P**) — A document containing instructions given by a shipper to a bank indicating the documents required for transferring title of goods should be delivered to the buyer (or drawer) only upon receiving the payment.

2.221. Drayage — *see* **2.102**

2.222. Drop-shipping — A form of retail business wherein the seller accepts customer orders but does not keep goods sold in stock. Instead, it transfers the orders and their shipment details to either the manufacturer, a wholesaler, another retailer, or a fulfilment centre, which then ships the goods directly to the customer.

2.223. Duties — Taxes levied based on tariffs for imported/manufactured goods.

2.224. Duty Drawback — A refund of part or full of custom duty paid at the time of importing goods when it is exported at a later time, in the same or a different form.

2.225. *Duty Free Zone* — A designated physical location in which a firm does not have to pay custom duty on import of goods or equipment.

NOTE — As per EPZ policy, these firms are required to fulfil an export obligation. Also known as Export Processing Zone (EPZ).

2.226. Dynamic Allocation — A practice where product locations within the warehouse are allowed to change due to variability in product turnover.

2.227. Dynamic Pricing — Also referred to as surge pricing, demand pricing, or time-based pricing is a pricing strategy in which businesses set flexible prices for products or services based on current market demands.

2.228. Earned Value Management (EVM) — Earned value management, earned value project management, or earned value performance management is a project management technique for measuring project performance and progress in an objective manner to tell if you're behind schedule or over budget on your project.

2.229. Earnest Money — Money paid as a pledge along with the bid to bind itself to the agreement if placed on them in response to the bid.

2.230. Earnest Money Deposit (EMD) — A deposit along with a bid as per terms of the tender document.

NOTE — In case, the bidder does not honour the offer, if the contract is awarded, EMD is forfeited.

2.231. E-Business — A means of doing business that uses electronic technologies, such as EDI, the Internet and Web –based supply chain integration.

2.232. E-Commerce — A way to execute Business transactions including consumer marketing, ordering and payment functions and share information with other businesses, consumers or with government by using computer and telecommunication networks, including the Internet Intranets, and/or Extranets.

2.233. Economic Batch Quantity (EBQ) — Quantity that is calculated to minimize the combined costs of purchasing, manufacturing and holding stock. Also known as Optimum Batch Quantity/Economic lot-size.

2.234. Economic Order Quantity (EOQ) — An optimal order quantity that minimizes its total costs related to ordering, receiving, and holding inventory. The EOQ formula is best applied in situations where demand, ordering, and holding costs remain constant over time.

2.235. Economic Order Quantity (EOQ) — Order quantity which minimizes the total costs (ordering cost, inventory carrying cost and product cost).

2.236. Economies of Scale — The cost advantages that an enterprise obtains due to its scale of operation and are typically measured by the amount of output produced. A decrease in cost per unit of output enables an increase in scale.

2.237. Economies of Scope — A proportionate saving gained by producing variety of distinct goods, when the cost of doing so is less than that of producing each product separately.

2.238. Efficient Consumer Response (ECR) — A supply chain practice for meeting consumer demand whilst reducing cost and inventory with manufacturers and retailers working closely together.

2.239. Efficient Frontier — A concept in operations management that states that a company is 'efficient' if it has the highest perceived value for a given cost to deliver products and services. It indicates the operational efficiency of a company considering whether the company is a low-cost provider or a high-cost provider and how should it position itself as per their strategy.

2.240. e-Fulfilment — A short term for 'e-commerce fulfilment,' which is the process of fulfilling and shipping orders to customers. This includes receiving, storing inventory, processing orders, picking, and packing items, shipping packages to their final destination, and facilitating e-commerce returns.

2.241. Electronic Data Interchange (EDI) — A mode in which the interaction is between a machine of one business entity to the machine of other business entity.

2.242. Embargo — An order issued by a government or other agency, prohibiting the dispatch/receipt of specified goods to a particular country or entity or freighting from one place to another through specified mode.

2.243. Emissions Trading Scheme (ETS) — Emissions trading is a market-based approach to controlling pollution by providing economic incentives for reducing the emissions of pollutants. The concept is also known as cap and trade (CAT) or emissions trading scheme (ETS). Carbon emission trading for CO2 and other greenhouse gases has been introduced in China, the European Union, and other countries as a key tool for climate change mitigation.

2.244. End-to-End (E2E) Supply Chain — A supply chain that involves an integrated process from product design and procurement of raw materials then scheduling, production and then final delivery of finished product to the customer.

2.245. Engineering Change Management (ECM) — A systematic approach to the documentation of changes from the identification of the required change, through the planning and implementation of the change, and culminating with the closure of the issue.

2.246. Engineering Change Request (ECR) — A document that describes proposed enhancements to a product design, which are routed, reviewed, and approved by engineering teams for approval.

2.247. Engineer-to-order — A type of manufacturing where a product is engineered and produced after an order has been received meeting the exact specifications of their customer.

2.248. EOL (End-of-Life) Product — A product at the end of the product lifecycle which prevents users from receiving updates, indicating that the product is at the end of its useful life (from the vendor's point of view).

2.249. EPCIS (Electronic Product Code Information Services) — A global GS1 Standard for creating and sharing visibility event data, both within and across enterprises, to enable users to gain a shared view of physical or digital objects within a relevant business context.

2.250. Euro pallet — Pallets of size 1200 mm × 800 mm made to euro pallet-agreed specifications.

2.251. European Free Trade Association (EFTA) — The intergovernmental organisation set up in 1960 by its then seven Member States in Europe for the promotion of free trade and economic integration between its members.

2.252. Evaluation of Bids — The examination of bids after opening to determine the bidder's responsibility and responsiveness to requirements, and other characteristics of the bids relating to the award of contract.

2.253. Event Management — The application of project management to the creation and development of small and/or large-scale personal or corporate events such as festivals, conferences, ceremonies, weddings, formal parties, concerts, or conventions.

2.254. Everyday Low Pricing (EDLP) — A pricing strategy used by retailers which promises customers the lowest prices in their store without having to use a coupon, wait for a sales event, or take any other actions to get a reasonable price on the items they purchase.

2.255. Examples of bulk materials include coal, oil, sand, pig iron, limestone, liquids and gases.

2.256. Exchange Rate Risk — A foreign currency risk is the possibility that currency fluctuations can affect a firm's expected future operating cash flows.

2.257. Expected Shortage Per Replenishment Cycle (ESC) — The average units of demand that are not satisfied from inventory in stock per replenishment cycle.

2.258. Exponential Smoothing — Is a sophisticated approach to supply chain forecasting. It uses weighted averages with the assumption that past trends and events will mirror the future.

2.259. Export Licence — A document issued by the Government that permits the export of specified goods to specified countries as per the prevailing policy.

2.260. Export Oriented Units (EOU) — An establishment enjoying the same benefit as the units in export processing zones. These units can be located anywhere in the country.

2.261. Export Processing Zones (EPZ) — Special custom bound areas, to provide an internationally competitive custom duty-free environment for export of production.

2.262. Ex-stock — Goods available on demand from inventory.

2.263. Failure Mode Effects Analysis (FMEA) — A systematic, proactive method for evaluating a process to identify where and how it might fail and to assess the relative impact of different failures, in order to identify the parts of the process that are most in need of change.

2.264. Fast-moving Consumer Goods (FMCG) — See Consumer Packaged Goods (CPG)

2.265. FIFO (First-In First-Out) — Inventory and costing policy in which the goods are used/costed in the order in which received.

NOTE — See also 2.379

2.266. Fill Rate — The percentage of customer orders a company can fulfil without running out of inventory to fill customer orders in wholesale and retail business.

2.267. Financial Modelling — The task of building an abstract representation (a model) of a real-world financial situation with mathematical models such as Discounted Cash Flow (DCF), Merger Model (M&A), Initial Public Offering (IPO) Model, and Leveraged Buyout (LBO) Model.

2.268. Finished Goods Stock — An inventory of completed products available for supply to customers.

2.269. Finished Product — Final end product produced by an enterprise for supply to a customer.

2.270. Finite Capacity Scheduling — An approach to understand how much work can be produced in a certain time period, taking limitations on different resources into consideration to ensure that work proceeds at an even and efficient pace throughout the plant.

2.271. First Come, First Served (FCFS) — A rule by which jobs are sequenced by their arrival times.

2.272. First In, Still Here (FISH) — An accounting buzzword that describes when companies still have inventory on hand that is not being sold due to slow movement or obsolescence.

2.273. Fixed Interval Reorder System — A reordering system where the time interval between each two orders is fixed, but the size of the order is not fixed. Order quantity varies according to usage.

2.274. Fixed Order Quantity System — Inventory control method where the size of the order is fixed, but the time interval between orders depends on actual demand.

2.275. Fixed-order Interval System — Also known as Fixed-time period models (or T-models), is a method of inventory control. A fixed interval is developed by keeping a check on the demand of the product and used in managing the supply of the raw material.

2.276. Fixed-order Quantity Models — Also known as the Q-Models where if the stock on hand reaches the reorder point (ROP), a fixed quantity of materials is ordered.

2.277. Flow Time — The amount of time a flow unit spends in a business process from beginning to end, also known as the total processing time. If there is more than one path through the process, the flow time is equivalent to the length of the longest path.

2.278. Food and Agriculture Organization (FAO) — The Food and Agriculture Organization of the United Nations is a specialized agency of the United Nations that leads international efforts to defeat hunger and improve nutrition and food security.

2.279. Force Majeure Clause — If at any times during the continuance of the contract, the performance of whole or in part by either party of any obligation under the contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, fire, floods, explosions, epidemics, quarantine, restrictions, strikes, lockouts or act of God.

2.280. Forecast Error — The difference between the actual or real and the predicted or forecast value of a time series or any other phenomenon of interest.

2.281. Forecast Horizon — The length of time into the future for which forecasts are to be prepared which generally vary from short-term forecasting horizons (less than three months) to long-term horizons (more than two years).

2.282. Foreign Direct Investment (FDI) — An investment in the form of a controlling ownership in a business in one country by an entity based in another country.

2.283. Foreign Trade Zones — Locations determined by the government that do not need to pay tariffs or duties on imports, particularly goods that are assembled and re-exported.

2.284. Forward Buying — A process related to retail inventories, financial instruments, assets etc., wherein they are purchased in quantity excess to demand to counter future price rise.

2.285. Forward Buying — The process of placing an order for a supply of goods in a specified time in future at a specified rate.

2.286. Forward Scheduling — A method to complete manufacturing of products as soon as possible before the due date. This is achieved by scheduling the relevant resources and materials as soon as they're available.

2.287. Foul Bill of Lading — A receipt issued by a shipping company indicating that the goods received were damaged.

2.288. Fourth Party Logistics (4pl) — A firm that assembles and manages the resources, capabilities, and technology of its own organization with those of complementary service providers to deliver a comprehensive supply chain solution.

2.289. Free Trade Zone — Government established zones that permit free entry and storage of goods. Duties do not need to be paid until the goods leave the zone.

2.290. Freight Bill — The carrier's invoice for transportation charges for a shipment.

2.291. Freight Forwarder — An entity that facilitates the shipment of goods.

NOTE — Also known as Freight and Forwarding Agents.

2.292. FSN Analysis — FSN means Fast-moving, slow-moving, and non-moving in inventory management. FSN is one of the inventory management techniques and it is about segregating products based on their consumption rate, quantity, and the rate at which the inventory is used.

2.293. Full Truck Load (FTL) — A shipping mode where one truck is responsible for a single shipment of large amounts of homogeneous cargo, generally the amount necessary to fill an entire semi-trailer or intermodal container from one point to another.

2.294. Full Truckload (FTL) — Transportation based on the use of full capacity (by weight/volume) of a container/wagon/truck by a consigner.

2.295. Fully Allocated Cost — The variable cost associated with a particular output unit plus a common cost allocation.

2.296. G2B — A term "Government-to-Business" where a government agency communicating with or purchasing products or services from a business.

2.297. General Agreement on Tariffs and Trade (GATT) — International trade agreement specifying conditions, duties and acceptable commerce practices.

2.298. Geocoding — The process of transforming a description of a location—such as a pair of coordinates, an address, or a name of a place—to a location on the earth's surface.

2.299. Geographic Information System (GIS) — A type of database containing geographic data (that is, descriptions of phenomena for which location is relevant), combined with software tools for managing, analysing, and visualizing those data.

2.300. Global Political Risk Index (GPRI) — An index of country stability ratings for emerging market countries by using a unique methodology measuring a country's ability to absorb political shocks. The higher the number, the more stable the country is.

2.301. Global trade item number (GTIN) — A unique and internationally recognized identifier for a product that will appear next to the barcode on a product's packaging which helps to classify and display products.

2.302. Globalization — The word used to describe the growing interdependence of the world's economies, cultures, and populations, brought about by cross-border trade in goods and services, technology, and flows of investment, people, and information.

2.303. GOLF Analysis — The letters stand for Government, Ordinary, Local and Foreign which are canalized through the State Trading Corporation (STC), Minerals and Metals Trading Corporation, Indian Drugs and Pharmaceutical Ltd (IDPL), Mica trading corporation etc. using special procedures of inventory control.

2.304. Good-faith receiving (GFR) — The principle of GFR means that stock is received without checking, resulting in labour savings by accepting supplier deliveries in good faith, and faster turnaround times for deliveries, leading to supplier efficiencies.

2.305. Goods — Product, commodity, equipment, item in part or complete, services.

2.306. Goods in Transit — Goods which have left the consignor but have not reached the consignee.

2.307. Goods Inward Inspection — The activity conducted for quality, quantity and product verification/measurements on incoming material.

NOTE — Incoming material may be from a vendor or other internal manufacturing sites.

2.308. Goods Receipt and Acceptance Note (GRN/ GRAN) — A document prepared by the buying organization indicating the quantity and quality of the goods namely, specified in the order.

NOTE — Also known as Goods Received Note (GRN).

2.309. Goods Receiving Stock— Stock comprising of goods that have arrived at the receiving point and that are not yet available for the use of that organization.

2.310. Government Procuring Entity — Purchases made by Central Government Ministry, Central Public sector enterprises, any company in which 50 percent or more paid up share capital is held by the Central Government, anybody established or constituted whose expenditure is met from the Consolidated Fund of India, any society, trust or autonomous body constituted by an Act of Parliament, any other entity which receives substantial financial assistance from Central Government.

2.311. Green Sourcing — A policy seeks to promote and incentivize environmental awareness referred to the whole supply chain and to encourage decisions that can reduce the environmental impact of goods and services sourced.

2.312. Greenfield Site — Site that has not been developed before and is still countryside.

2.313. Greenhouse Gas Protocol (GHGP) — GHGP establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations and value chains. GHGP is a partnership between World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), and GHGP works with governments, industry associations, NGOs, businesses, and other organizations.

2.314. Group Purchasing — Procurement process by consolidating requirement of materials/items for a group of organizations owned by same or different entities.

2.315. Guarantee — A commitment by a manufacturer or supplier to the effect that goods supplied are free from defective workmanship or materials together with an undertaking to remedy goods found to have such defects (see also 2.704).

> NOTE — In the context of financial matters, guarantee means a promise by an entity (the guarantor) to make good the debts of another (the principal) in the event of the principal failing to meet his or her other financial responsibilities to a third party.

2.316. Handling Costs — Charges involved in moving, transferring, preparing, and handling a consignment.

2.317. Hard Currency — Currency that can be exchanged for money of other countries quickly.

2.318. Hazard Analysis and Critical Control Point (HACCP) — A management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement, and handling, to manufacturing, distribution and consumption of the finished product.

2.319. Hazard Classes — A classification systems that allows individuals to efficiently identify and understand the dangers posed by hazardous chemical substances that share similar properties.

2.320. Hazardous Materials — Materials or substances that have been determined by the designated authorities to be a risk to health, safety and property which must be packaged, labelled, handled, and transported according to stringent regulations from concerned agencies.

> NOTE — Such materials include explosives, flammables, poisons, corrosives, and radioactive materials, etc.

2.321. Heijunka — A Japanese term in lean manufacturing meaning production levelling, also known as production smoothing, is a technique for reducing the Mura (unevenness) which in turn reduces Muda (waste).

2.322. Hierarchical Supply Chain Performance Measurement Framework (HSCP) — A three level (strategic, tactical, and operational level) hierarchical performance measurement framework that can link a wide array of functional areas and performance measures.

2.323. Hire Purchase — A system in which a party buys the goods and gives it on lease to a user for a specified period on payment of a lease rent. The title of the goods will pass on to the user on completion of the lease period as per the terms agreed.

2.324. HML Analysis — A method to classify inventory according to a product's unit price in three categories, high cost (H, items with high unit value), medium cost (M, items with medium unit value), low cost (L, items with low unit value).

2.325. Hockey Stick Phenomenon — A phenomenon attributed to salespeople tend to rush and close deals towards the end of the quarter to meet their quarterly sales target.

2.326. Horizontal Integration — A business strategy in which one company acquires or merges with another that operates at the same level in an industry to grow in size and revenue, expand into new markets, diversify product offerings, and reduce competition.

2.327. Hotshot Trucking — Hauling smaller, more time-sensitive LTL (Less Than Truckload) loads within a specific timeframe, and usually to a single customer or location usually delivered using medium-duty trucks that pull flatbed trailers.

2.328. Hub Warehouse — A central warehouse that's used to cater various destinations that may be customers, stores, or other smaller warehouses to optimize the overall transportation costs.

2.329. Hub-and-Spoke Networks — A distribution model that has a centralized warehousing and shipment system that resembles the structure of a bicycle wheel, the centre of the wheel is the hub or a distribution centre and each spoke represents a direction of delivery to a destination.

2.330. Human-machine Interaction (HMI) — Refers to the communication and interaction between a human and a machine via a user interface such as a keyboard, a mouse, touch screens, voice, and gestures.

2.331. Hurdle Rate — Also known as minimum acceptable rate of return (MARR), is the minimum required rate of return or target rate that investors are expecting to receive on an investment. The rate is determined by assessing the cost of capital, risks involved, current opportunities in business expansion, rates of return for similar investments, and other factors that could directly affect an investment.

2.332. Identical Bid — A bid that agrees in most of the areas with another bid.

2.333. Idle Capacity — Unused production, storage or logistics resources.

NOTE — This could be due to lack of demand or a strategic policy by the company to meet sudden increase in demand.

2.334. Igloos — Containers used in air transportation and its shape fits the internal wall contours of a cargo hold of an airplane.

2.335. Implosion — It is a process of finding out as to how many products can be made from a given set of components, sub-assemblies and material using a bill of materials.

2.336. Import Licence — A document issued by the Government that permits the import of specified goods from specified countries as per the prevailing policy.

2.337. Import Substitution — A process of producing indigenously those goods that were earlier being imported, by developing necessary competencies/ processes.

2.338. In Transit — *See also* **2.306.**

2.339. Inbound Logistics — A system that focuses on the supply part of the supply-demand equation, the way materials and other goods are brought into a company including the processes to order, receive, store, transport and manage incoming supplies.

2.340. Inbound Logistics — Flow of goods from suppliers to manufacturing/producing/ distributing organization and associated flow of information and supporting activities.

2.341. Incident Tracking — A system to report problems or incidents, locate and provide solution/ advice, provide escalation when necessary and track the successful resolution or current status of each assigned incident.

2.342. INCO Term — A set of three-letter standard trade terms most commonly used in international contracts for the sale of goods.

2.343. Incoming Inspection — *See also* 2.307.

2.344. Independent Demand — Demand that occurs by the request of customers for products, kit products, service parts that has no relationship with other items. It is used as it is to setup the production plan.

2.345. Indian Value Engineering Society (INVEST) — The Indian Value Engineering Society established in October 1977, serves Indian Industry by dissemination of specialized Knowledge to professionals, who in turn help industries to improve their profitability through the technique of Value Engineering.

2.346. Industrial Internet of Things (IIoT) — Refers to interconnected sensors, instruments, and other devices networked together with computers' industrial applications, including manufacturing, supply chain, logistics, sustainability, and energy management.

2.347. Institute for Local Self-Reliance (ILSR) — A non-profit organization and advocacy group, founded in 1974, located in in Washington, D.C., that provides technical assistance to communities about local solutions for sustainable community development in areas such as banking, broadband, energy, independent business, and waste.

2.348. Intergovernmental Panel on Climate Change (IPCC) — An intergovernmental body of the United Nations responsible for advancing knowledge on human-induced climate change. It was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), and later endorsed by United Nations General Assembly, headquartered in Geneva, Switzerland, it is comprised of 195 member states.

2.349. Intermittent Demand — Sporadic demand for end items that may also involve low volumes and are more typical of to-order than to-stock environments.

2.350. Intermodal Transport — A freight transport that involves the transportation of freight in an intermodal container or vehicle, using multiple modes of transportation (truck, rail, ship), without any handling of the freight itself when changing modes.

2.351. Intermodal Transportation — The use of two or more transportation modes to move the consignment.

2.352. Internal Supply Chain Management (ISCM) — Refers to the chain of activities within a company, specifically, purchasing, production, sales, and distribution.

2.353. International Commercial Terms (**INCO Terms)**

2.353.1. *EXW — EX WORKS (named place of delivery)* — The Seller's only responsibility is to make the goods available at the Seller's premises. The Buyer bears full costs and risks of moving the goods from there to destination.

2.353.2. *FCA – FREE CARRIER (named place of delivery)* — The Seller delivers the goods, cleared for export, to the carrier selected by the Buyer. The Seller loads the goods if the carrier pickup is at the Seller's premises. From that point, the Buyer bears the costs and risks of moving the goods to destination.

2.353.3. *CPT – CARRIAGE PAID TO (named place of destination)* — The Seller pays for moving the goods to destination. From the time the goods are transferred to the first carrier, the Buyer bears the risks of loss or damage.

2.353.4. *CIP – CARRIAGE AND INSURANCE PAID TO (... named place of destination)* — The Seller pays for moving the goods to destination. From the time the goods are transferred to the first carrier, the Buyer bears the risks of loss or damage. The Seller, however, purchases the cargo insurance.

2.353.5. *DAT – DELIVERED AT TERMINAL (... named terminal at port or place of destination)* — The Seller delivers when the goods, once unloaded from the arriving means of transport, are placed at the Buyer's disposal at a named terminal at the named port or place of destination. "Terminal" includes any place, whether covered or not, such as a quay, warehouse, container yard or road, rail or air cargo terminal. The Seller bears all risks involved in bringing the goods to and unloading them at the terminal at the named port or place of destination.

2.353.6. *DAP – DELIVERED AT PLACE (... named place of destination)* — The Seller delivers when the goods are placed at the Buyer's disposal on the arriving means of transport ready for unloading at the names place of destination. The Seller bears all risks involved in bringing the goods to the named place.

2.353.7. *DDP – DELIVERED DUTY PAID (... named place)* — The Seller delivers the goods -cleared for import – to the Buyer at destination. The Seller bears all costs and risks of moving the goods to destination, including the payment of Customs duties and taxes.

2.354. International Import Certificate — A document required by the importing country indicating that the importing country recognizes that controlled shipment is entering their country. The importing country pledges to monitor the shipment and pre-vent its re-export, except in accordance with its own export control regulations.

2.355. Interstate Commerce Commission (ICC) — A regulatory agency in the United States created by the Interstate Commerce Act of 1887. The ICC was abolished in 1995, and its remaining functions were transferred to the Surface Transportation Board.

2.356. Intrusion Detection System (IDS) — A device or software application that monitors a network or systems for malicious activity or policy violations. Any intrusion activity or violation is typically reported either to an administrator or collected centrally using a security information and event management (SIEM) system, which combines outputs from multiple sources and uses alarm filtering techniques to distinguish malicious activity from false alarms.

2.357. Inventory Management — A set of approaches to integrate suppliers, manufacturers, warehouses, distributors and retailers such that goods are produced and delivered in the right quantities, at the right locations, at the right time in order to minimize system wide cost while maintaining customer service level.

2.358. Inventory Policy — Strategic decisions on inventory management by an organization to meet its stated goals of customer service level.

2.358.1. Inventory Shrinkage — Losses of inventory due to obsolescence, deterioration, pilferage, damage, evaporation, sublimation, etc.

2.358.2. Inventory Turns — The ratio of cost of goods sold divided by the cost of average inventory during a year.

2.359. Inventory Valuation — The process of computing a monetary value of inventory on a particular date, based on either of the standard cost, first-in first-out (FIFO), last-in first-out (LIFO), average price or other methods.

2.360. Inventory Velocity — The speed with which inventory moves through a defined cycle that is, from receiving to shipping.

2.361. Inventory Write-Off — The deletion of the value (from the current inventory value) of the inventory items, found of no use due to obsolescence/surplus, defective or market changes.

2.362. Invitation to Bid — A tender document of the buyer detailing the requirements including specifications and other terms and conditions referred to the probable bidders for obtaining their bids.

2.363. It is generally handled by conveyor or pumps and is measured by weight or volume.

2.364. Item Master — A document having description, unit of measure, dimensions, family and group classification, production or purchasing ordering data, next higher assembly, alternate items and other pertinent information of an item.

NOTE — It may include the current approved suppliers.

2.365. Just-In-Time (JIT) — Manufacturing philosophy in which each part/component of a product arrives at a time when it is required to be assembled.

NOTE — It cuts non-value added tasks, reduces waste , cuts inventory, eliminates delay.

2.366. Key Performance Indicators (KPIs) — A set of quantifiable measurements used to gauge a company's overall long-term performance to determine a company's strategic, financial, and operational achievements, especially compared to those of other businesses within the same sector.

2.367. Kitting — A system to fill orders by pre-assembling individual items into kits that are ready for manufacturing lines or shipping to end customers.

2.368. Landed Costs— The total cost of a shipment at customer’s premises which includes purchase price, freight, insurance, duties, taxes and other costs.

2.369. Last Mile Delivery — Refers to the very last step of the delivery process when a parcel is moved from a transportation hub to its final destination, which is usually a personal residence or retail store.

2.370. Last Purchase Price (LLP) — The price paid in the latest contract of a similar magnitude which has been successfully completed.

NOTE — It should normally be not earlier than 3 years old.

2.371. Lead Time — The total time required from the time the demand is raised and it is met.

2.372. Leadership in Energy and Environmental Design (LEED) — A green building certification program used worldwide, developed by the non-profit U.S. Green Building Council (USGBC), that includes a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes, and neighbourhoods, which aims to help building owners and operators be environmentally responsible and use resources efficiently.

2.373. Lean Logistics — A methodology to improve operations at all levels and optimising the supply chain by reducing waste, which is achieved through better inventory and material management, and by eliminating unnecessary steps in delivery.

2.374. Lean Manufacturing — A methodology aimed at minimizing the resources required for production of goods by eliminating waste and non-value adding activities.

2.375. Lean Warehousing — A methodology to save time, money, space, and energy at every point in the warehouse's operations to increase the value of the warehouse in the supply chain.

2.376. Less Than Truckload (LTL) — A shipping service for relatively small loads or quantities of freight to accommodate the shipping needs of countless businesses that need to move smaller batches of goods frequently, offering economies of scale so that freight costs of individual shipments are minimized.

2.377. Less Than Truckload (LTL) — Transportation based on the use of part capacity (by weight/volume)of a container/wagon/truck by a consigner.

NOTE — Transportation rates per unit for LTL shipments are higher than those for FTL.

2.378. Life Cycle Cost — The analysis of costs (acquiring, using, carrying, and disposal, etc) over the entire life cycle of a given product, rather than a specific fiscal period. It includes factors based on stage (introduction, growth, maturity, decline) and all research and development, design, marketing, production and logistics costs.

2.379. LIFO (Last-in First-Out) — The method of valuing stocks which assumes that all issues or sales are charged at the most current cost but stocks are valued at the oldest cost available.

NOTE — See also 2.265

2.380. Lights-out Factory — An automatic factory is a place where raw materials enter, and finished products leave with little or no human intervention.

2.381. Lights-out Warehouse — An advanced warehouse facility, where all tasks, such as transferring, gripping, sorting, and loading, are performed automatically by robots without any human intervention and without the need for artificial light.

2.382. Liner Programming — A method to achieve the best outcome in a mathematical model whose requirements are represented by linear relationships in such situations as in facility location, transportation, and distribution.

2.383. Liquidated Damages — Damages to be claimed by purchaser for delay in supplies from the agreed date of delivery at the agreed rates as per the contract.

2.384. Little's Law — A theorem by John Little which states that the long-term average number 'L' of customers in a stationary system is equal to the long-term average effective arrival rate 'λ' multiplied by the average time 'W' that a customer spends in the system, expressed algebraically as $L = \lambda W$.

2.385. Logistics 4.0 — A system for managing the storage, flow of raw materials, semi-finished and finished products to meet customer requirements using enabling technologies (advanced robotics, augmented reality, internet of things, big data, analytics, etc.).

2.386. Lot — A production run or batch that can be isolated from other runs and identified with a specific set of material, production facility and process characteristics and manufactured under identical conditions of production.

2.387. Lot Number — The allocation of a unique number, to one or more of a product during manufacture or assembly, to provide traceability.

2.388. Lot Sizing — A procedure to calculate production or procurement quantities using different lot sizing techniques such as static, periodic, or dynamic models. Static lot sizing consists of placing a fixed order quantity or ordering exactly the amount that is needed to cover forecasted demand. Periodic lot sizing groups together the requirements that lie in a determined period. For dynamic lot sizing, the cumulative forecasted demand throughout the entire time horizon is considered to determine the optimal order quantities.

2.389. Lot Tolerance Percent Defective (LTPD) — A sampling plan (can be single, double, or multiple) used to accept or reject incoming material, parts, or products. LTPD is defined as the percent defective that the sampling plan will reject.

2.390. Lot-for-lot (L4L) — A method of lot sizing, where net requirements pertaining to each period are the quantity of order.

2.391. M2M Communication — A direct communication between devices using any communications channel, including wired and wireless using industrial instrumentation, enabling a sensor or meter to communicate the information it records to application software that can use it.

2.392. Machine Hours — The actual time recorded by a machine when used for production, and used in efficiency and utilization calculations.

2.393. Maintenance Costs — The costs incurred to support and ensure continued availability of an asset. NOTE — It includes cost incurred on scheduled, unscheduled repairs and support staff.

NOTE — It includes cost incurred on scheduled, unscheduled repairs and support staff.

2.394. Maintenance, Repair, and Operations (MRO) — Refers to everything the maintenance crew does to keep a facility and the equipment in good operating condition.

2.395. Make or Buy Decision — An analysis of the cost of producing a particular item in-house; namely outsourcing it, with a view to assess as to which of these two options is economically beneficial.

2.396. Make to Order (MTO) — A manufacturing method in which commonly-used raw materials and components may be stocked based on previous demand history, but further processing into higher-level items is not done until receipt of a customer order.

2.397. Make to Stock (MTS) — A manufacturing method in which finished goods are produced and stocked even prior to receipt of an order from the customer.

NOTE — It uses a forecasting technique to initiate production of end items.

2.398. Make-to-order — A business production strategy a firm only manufactures the product once the customer places the order, creating additional wait time for the consumer to receive the product, but allowing for customization.

2.399. Make-to-stock — A traditional production strategy used by businesses to manufacture, store, and sell with anticipated consumer demand.

2.400. Managed Services — The practice of outsourcing the responsibility for maintaining, and anticipating need for, a range of processes and functions to improve operations and reduce expenses, between a client and the Managed Service Provider (MSP) who are bound by a contractual, service-level agreement that states the performance and quality metrics of their relationship.

2.401. Manufacturing Execution System (MES) — A computerized systems used in manufacturing to track and document the transformation of raw materials to finished goods with complete visibility, control and manufacturing optimization of production and processes across the enterprise.

2.402. Manufacturing Lead Time —The total of all individual elements of lead time such as order preparation, queue, setup, processing, inspection, etc associated for a particular product.

NOTE — It indicates a projected availability date for an end item if the required raw material is on-hand.

2.403. Manufacturing Resource Planning (MRP II) — A management concept for using human resources more productively for the effective planning of all resources of a manufacturing company.

NOTE — Ideally, it addresses operational planning in units, financial planning, and has a simulation capability to answer "what-if" questions and extension of MRP.

2.404. Marine Insurance — An agreement by an organization with a customer to cover loss or damage of ships, cargo, terminals, and any transport or cargo by which property is transferred, acquired, or held between the points of origin and final destination.

2.405. Maritime-only Terms

2.405.1. *FAS – FREE ALONGSIDE SHIP (... named port of shipment)* — The Seller delivers the goods to the origin port. From that point, the Buyer bears all costs and risks of loss or damage.

2.405.2. *FOB – FREE ON BOARD (...named port of shipment)* — The Seller delivers the goods on board the ship and clears the goods for export. From that point, the Buyer bears all costs and risks of loss or damage.

2.405.3. *CFR – COST AND FREIGHT (...named port of destination)* — The Seller clears the goods for export and pays the costs of moving the goods to destination. The Buyer bears all risks of loss or damage.

2.405.4. *CIF – COST INSURANCE AND FREIGHT (...named port of destination)* — The Seller clears the goods for export and pays the costs of moving the goods to the port of destination. The Buyer bears all risks of loss or damage. The Seller, however, purchases the cargo insurance.

2.406. Market-pull Products — Refers to the need/requirement, identified by potential customers or market research, for a new product or a solution to a problem, which comes from the marketplace.

2.407. Marshalling Area — A location in a warehouse where goods are brought under a single order, or items are grouped together for a purpose (Ex: Items grouped by delivery route) are inspected for errors and defects.

2.408. Mass Customization — A system that uses flexible computer-aided manufacturing systems to produce custom output, combining the low unit costs of mass production processes with the flexibility of individual customization.

2.409. Master Production Schedule (MPS) — A plan for individual commodities to be produced in each time period.

2.410. Material Requirements Planning (MRP) —A production planning and inventory control system used to manage manufacturing processes.

NOTES
1. Most MRP systems are software-based, while it is possible to conduct MRP by hand as well.
2. An MRP system is intended to
   — ensure materials are available for production and products are available for delivery to customers.
   — plan maintain the lowest possible material and product levels in store.
   — manufacturing activities, delivery schedules and purchasing activities.

2.411. Materials Requirement Planning (MRP) — A production planning, scheduling, and inventory control system used to manage manufacturing processes.

2.412. Maximum Order Quantity — An order quantity which will not be exceeded based on the maximum level fixed maximum level fixed.

2.413. Maximum Stock — The upper limit, expressed in quantitative, financial or time-based terms, to which the stock of an item should not exceed.

2.414. Mean Absolute Deviation (MAD) — The average absolute deviation of a data set is the average of the absolute deviations from a central point, a summary statistic of statistical dispersion or variability.

2.415. Mean Absolute Percentage Error (MAPE) — Also known as mean absolute percentage deviation, is a measure of prediction accuracy of a forecasting method in statistics.

2.416. Mean Squared Error (MSE) — An estimator that measures the average of the squares of the errors (the average squared difference between the estimated values and the actual value). MSE is a risk function, corresponding to the expected value of the squared error loss.

2.417. Metrics Maturity Model — A measurement system to quantify the ability of an organization for continuous improvement in a particular discipline to assess people/culture, processes/structures, and objects/technology.

2.418. Micro-fulfilment (MF) — A strategy that places small-scale warehouse facilities, often called Micro Fulfilment Centres (MFC) in densely populated urban locations closer to the consumer to improve delivery times. MFCs are sometimes highly automated that serves e-commece as well as local store pick-ups.

2.419. Milk Run — A delivery method used to transport mixed loads from various suppliers to one customer.

2.420. Minimum Order Quantity — The order quantity modified/increased, subsequent to the lot size requirement, based on the standard packing available/offered by a supplier.

2.421. Minimum Stock — A control limit in an inventory system which indicates the point at which a reordering is to be processed

2.422. Minimum Viable Product (MVP) — A version of a product with just enough features to be usable by early customers who can then provide feedback for future product development.

2.423. MNG Analysis — A selective inventory control method of grouping of inventory items as moving items (M), Non-moving items (N) and ghost items (G, refers to items which neither have been received nor issued during the year).

2.424. MODVAT (Modified Value Added Tax) — Excise duty on final product less the excise duty paid on the raw material/components.

2.425. Moving Average — The moving average is one of the simplest methods of chain forecasting. It examines data points by creating an average series of subsets from complete data. The average is used to make a prediction on the upcoming time period and is then recalculated every month, quarter, or year.

2.426. Multi-echelon Inventory Systems — An inventory system that relies heavily on layers of suppliers distributed across multiple distribution centres.

2.427. Nearshoring — A derivative of the business term offshoring, nearshoring is the transfer of business processes to companies in a nearby country, where both parties expect to benefit from one or more of the following dimensions of proximity: geographic, temporal (time zone), cultural, linguistic, economic, political, or historical linkages.

2.428. Negotiations — Discussions between two or more entities to reach a mutually satisfactory agreement on the essentials of a contract.

2.429. Net Requirements — The need for an item based on its gross requirements (from forecasts, customer orders, etc.), reduced by stock already on hand and scheduled receipts.

2.430. Net Zero Supply Chain — A supply chain designed to achieve "Net Zero" when there is an overall balance between emissions produced by a supply chain and emissions it takes out of the atmosphere.

2.431. Non-linear Programming — The process of solving an optimization problem where some of the constraints or the objective function are nonlinear in such applications as facility location, inventory management, and vehicle routing.

2.432. North American Free Trade Agreement (NAFTA) — An agreement to promote trade between the U.S., Canada, and Mexico which eliminated most tariffs on trade between the three countries, went into effect on Jan. 1, 1994.

2.433. Obsolescence — The degradation in the value and usefulness of a resource based on its age, technological advancement, change in style/model or other factors that may require a partial or total write off of its currently-stated value.

2.434. Obsolete — Status of an item or equipment indicating that due to obsolescence it is no longer required and/or not to be used.

2.435. Occupational Safety and Health Administration (OSHA) — A large regulatory agency of the United States Department of Labour that originally had federal visitorial powers to inspect and examine workplaces in manufacturing, assembly, warehouses. OSHA's workplace safety inspections have been shown to reduce injury rates and injury costs without adverse effects to employment, sales, credit ratings, or firm survival.

2.436. Offload — To shift a production or logistics requirements from the original to an alternate resource due to capacity and/or timing constraints.

2.437. Offset — Any condition imposed on a foreign bidder in relation to a particular procurement so as to encourage local development by means of domestic content/licensing of technology/investment requirements/counter-trade or other similar requirements.

2.438. Offshore — Production and operating or technical support facilities located in a foreign country.

2.439. Offshoring — The relocation of a business process from one country to another, typically an operational process, such as manufacturing, or supporting processes, such as accounting.

2.440. Omni-channel — A multichannel approach to sales that seeks to provide customers with a seamless shopping experience, whether they're shopping online from a desktop or mobile device, by telephone, or in a brick-and-mortar store.

2.441. On Order — The goods that have yet to arrive at a location including all orders which are open/in transit/being picked up.

2.442. On-hand Balance — The quantity of an item which is held physically in stock.

2.443. Online Bidding — A process where organizations require supplier to submit their bids electronically.

2.444. Onshoring — The process of sourcing or relocating a business' production operations within domestic national borders to increase supply chain control, avoid rising foreign production costs, and help domestic economies grow.

2.445. On-Time Delivery — The receipt of scheduled shipments on the expected date, or within an allowable tolerance time limit.

2.446. Ontime In Full (OTIF) — A metric used in supply chain to ensure that an order must be delivered with exactly the items and quantities as ordered and, on the day, requested.

2.447. Opening Stock — The stock of an item at the beginning of an inventory accounting period.

2.448. Operations and Supply Chain Management (OSCM) — A broad area that covers both manufacturing and service industries, involving the functions of sourcing, materials management, operations planning, distribution, logistics, retail, demand forecasting, order fulfilment, etc.

2.449. Operations Research — A discipline that deals with the development and application of advanced analytical methods such as linear programming, integer programming, goal programming, decision trees, game theory, simulation to improve decision-making.

2.450. Optical Character Recognition (OCR) — The electronic conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document, a photo of a document, a scene-photo or from subtitle text superimposed on an image.

2.451. Optimized Production Technology (OPT) — A production improvement concept invented by Eliyahu M. Goldratt as Theory of Constraints (TOC), used to reduce bottlenecks, increase throughput, reduce inventories, and hence reduce overall manufacturing costs.

2.452. Order — A request by the buyer to the supplier for supply of goods or services specifying description of item, quantity, rate, delivery schedule , terms and conditions etc.

2.453. Order Lead Time — The total internal processing time necessary to transform a demand from the time it is felt and till the order is transmitted to the supplier.

2.454. Order Management System (OMS) — A computer software system for order entry, processing, tracking, shipping, invoicing, and servicing (after sales service).

2.455. Order on Hold — Direction by a buyer to interrupt certain operations/work pending till further instructions.

2.456. Order Picking — The first stage in fulfilling a customer's order, when the products listed in an order are retrieved from their respective warehouses, followed by packing, shipping, and post-sales activity.

2.457. Ordering Cost — The total of all costs associated with the processing, release of a purchase order, receipt of goods, inspection, etc.

2.458. Ordering Costs — The expenses a company incurs to purchase and receive the materials and products it stocks in its inventory.

2.459. Order-up-to Level (OUL) — An inventory management system where an amount of the item is ordered to return stock levels to the target level, when stock levels are periodically reviewed.

2.460. Original Equipment Manufacturer (OEM) — A company that manufactures and sells products or parts of a product that their buyer, another company, sells to its own customers while putting the products under its own branding.

2.461. Original Equipment Manufacturer (OEM) —Prime manufacturer of an item/equipment used by specific buyer(s).

NOTE — One manufacturer can be an OEM for many buyers. There can be many OEM for a particular item/equipment.

Commented [B1]: See 2.461

2.462. Outbound Logistics — Outbound logistics focuses on the demand side of the supply-demand equation, involves storing and moving goods to the customer or end user, that include processes such as order fulfilment, packing, shipping, delivery, and customer service related to delivery.

2.463. Outbound Logistics — The processes and network used to pick, ship, track and store items ordered by customers, distribution centers and other supply chain partners.

2.464. Outsourcing — A business practice of hiring a party outside a company to perform services or create goods that were traditionally performed in-house by the company's own employees and staff, a practice usually undertaken by companies as a cost-cutting measure.

2.465. Outsourcing — An external resource, instead of an internal, used for production of a single operation, from an item to complete assembly, shipping, order fulfillment, product design, network infrastructure support or other functions.

2.466. Overhead — Business operating costs that cannot be meaningfully or economically allocated to specific products or services.

NOTE — Examples of these could be manufacturing, marketing, general and administrative overheads etc.

2.467. Overrun — An excess of quantity produced/ costs incurred/time used compared to the standard/ budgeted/estimated parameters.

2.468. P2P (peer-to-peer) Architecture — A distributed network architecture that partitions tasks or workloads between peers to enable visibility, data sharing, and decision making in a supply chain.

2.469. PaaS (Product as a Service) — A business model that allows customers to purchase a desired result rather than the equipment that delivers that result offering benefits to both the customer and the provider. Some examples of products as a service, which shift the risk of performance from the customer to the manufacturer, include jet engines, compressed air, valves, robots, water pumps, smart lighting systems, and even passenger trains.

2.470. Packing Slip — A document of the supplier/ manufacturer that accompanies a shipment/ consignment describing its contents and quantities.

NOTE — It may also refer the order number.

2.471. Pallet — Portable platform of standard sizes made of wood/metal on which goods are stacked in unit loads and can be picked up by forklift/other machines to be transferred to a truck/storage place/conveyer.

2.472. Panama Canal Authority (PCA) — The agency of the government of Panama responsible for the operation and management of the Panama Canal.

2.473. Pareto Analysis — Also known as the 80/20 rule and ABC analysis, used to identify the most important activities or items which account for 80 per cent of the value, turnover, etc.

2.474. Past Supplier — A supplier who has been awarded contract(s) by the same organization for the same item prior to the date of opening of tenders and has successfully executed the contract(s) so awarded.

2.475. Pay-As-You-Throw (PAYT) — A usage-pricing model for disposing of municipal solid waste where users are charged a rate based on how much waste they present for collection to the municipality or local authority.

2.476. Performance measurement systems (PMS) — The process of collecting, analysing and/or reporting information regarding the performance of an individual, group, organization, system, or component.

2.477. Periodic Order Review System — Inventory control method where the time interval between two orders is fixed, but the quantity on order depends on actual demand during the period.

2.478. Periodic Replenishment — An inventory control method in which the required quantity is ordered at a fixed interval of time.

> NOTE — The quantity ordered each time will be dependent on various factors and may be different.

2.479. Perpetual Inventory Counting — Counting a proportion of the inventory each week, in order to spread the cost of counting stock through the year.

2.480. Perpetual Inventory System — An inventory control method in which the same quantity is ordered at a fixed reorder level of quantity.

2.481. Personal Digital Assistant (PDA) — Also known as a handheld PC, is a variety mobile device which functions as a personal information manager which have been mostly displaced by the widespread adoption of highly capable smartphones and tablets.

2.482. Personal Protective Equipment (PPE) — PPE is protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's body from injury or infection. The hazards addressed by protective equipment include physical, electrical, heat, chemicals, biohazards, and airborne particulate matter.

2.483. Physical-to-digital-to-physical Loop — A system where information is captured from the physical world to create a digital record, and then analysed in the digital-to-digital stage to draw meaningful insights which may spur action and change in the physical world, resulting in a flexible system capable of adapting to and learning from changes in the environment.

2.484. Pick Optimization — Also known as walking "path optimization" or "picking path optimization" is the process of finding the fastest way to navigate the warehouse to pick products quickly, accurately, and efficiently by using various picking methods such as wave picking, zone picking.

2.485. Picking — The act of selecting items from stock for an order.

2.486. Picking Operations — Warehouse picking refers to the process where individual items are picked from a fulfilment facility to satisfy customers' orders which is an essential aspect of order fulfilment and is considered one of the most expensive and labour-intensive activities in warehouses.

2.487. Pick-to-Light (PTL) — A system for picking items from warehouse shelves using lights to direct workers for fast collection of items without a list. A typical light-based picking system uses different coloured LED lights along with a series of letters and numbers.

2.488. Plant-Attached Warehouse — Refers to a warehouse that is attached to a manufacturing plant.

2.489. Point-of-sale (POS) Data — Data collected by a business when a transaction happens, which includes any checkout at a retail store, handheld POS hardware and even QR or barcode scanners from apps.

2.490. Point-of-Use Stores (POUS) — The practice of storing any inventory at the point where it will be used, in contrast to inventory that is stored in a warehouse, or at some other secondary location.

2.491. Poka-Yoke — A Japanese term that means “mistake-proofing” or “inadvertent error prevention”. A poka-yoke is any mechanism in a process that helps an equipment operator avoid mistakes and defects by preventing, correcting, or drawing attention to human errors as they occur.

2.492. Postponement — Deferring creating variants of a product or customization of a product until the latest possible stage of production or distribution.

2.493. Pre-qualification Document — The document issued by a procuring entity, including any amendments thereto, that set out the terms and conditions of the pre-qualification proceedings and includes the invitation to pre-qualify.

2.494. Procurement Contract — A contract entered into between the procuring entity and a successful bidder concerning the subject matter of procurement.

2.495. Procure-to-Pay (P2P) — A term used in the software industry to designate a specific subdivision of the procurement process to enable the integration of the purchasing department with the accounts payable department.

2.496. Producer’s Risk — The probability that a good product will be rejected as a bad product by the consumer.

2.497. Product Recall — A request to return, exchange, or replace a product after a manufacturer or consumer watch group discovers defects that could hinder performance, harm consumers, or produce legal issues for the producers. (see Reverse Logistics)

2.498. Productivity — A measure of resource utilization efficiency defined as the sum of the outputs divided by the sum of the inputs.

2.499. Progressive Payment — The system of making payments in phases based on the accomplishment of milestones, cost recovery agreement, or other contractual obligations.

2.500. Proof of Delivery (POD) — A document confirming the date of delivery/handing over of the goods by a supplier/carrier or their agents to buyer or his agent.

2.501. Property, Plant, and Equipment Turnover (PPET) — A ratio tells you how many rupees of sales a company gets for each rupee invested in property, plant, and equipment (PPE), which is a measure of how efficient the company is at generating revenue from fixed assets such as buildings, vehicles, and machinery.

2.502. Proposal or Offer — An entity signifying to another entity its willingness to do or to abstain from doing anything with a view to obtain the assent of the other to such act or abstinence.

2.503. Public Private Partnership — An arrangement between the Government owned entity on one side and a private sector entity on the other, for the provision of public assets or public services or both through investments being made or management being undertaken by the private sector entity for a specified period of time where there is well defined allocation of risk between the private sector and the public entity and the private entity receives performance linked payment that conform (or are benchmarked) to specified and pre-determined performance standards, measurable by public entity or its representatives.

2.504. Public Procurement — An acquisition by purchase, lease, licence or otherwise of works, goods or services including award of public private partnership projects, by a procuring entity whether directly or through an agency with which a contract for procurement services is entered into but does not include any acquisition without consideration.

2.505. Public Warehousing — The storage of goods by an entity that offers storage facilities to the public for a fee.

2.506. Pull System — The flow of resources in a production process by replacing only what has been consumed, typically controlled by Kanbans.

2.507. Purchase Orders (PO) — A commercial document issued by a buyer to a seller indicating types, quantities, and agreed prices for products or services, used to control the purchasing of products and services from external suppliers.

2.508. Purchasing — The functions associated with buying the goods and services.

2.509. Purchasing Lead Time (PLT) — The time lag between the decision to purchase an item and its actual addition to stock.

2.510. Purchasing Managers' Index (PMI) — An indicator of the economic health of the manufacturing sector, which is based on five major indicators: new orders, inventory levels, production, supplier deliveries and the employment environment. An index value above 50 percent indicates a positive development in the industrial sector, whereas a value below 50 percent indicates a negative situation.

2.511. Push System — A system in which a company produces more products than customers have requested to have enough inventory available if demand increases.

2.512. QR Code — A type of matrix barcode invented in 1994 by the Japanese automotive company Denso Wave, is a machine-readable optical label that contain information about the item or a website or an application.

2.513. Qualitative Forecasting — A set of techniques that are used when there isn’t a lot of data available to work with, such as for a relatively new business or when a product is introduced to the market. In this instance, other information such as expert opinions, market research, Delphi method, panel consensus and comparative analyses are used to form quantitative estimates about demand.

2.514. Quality at Source (Q@S) — An approach to quality that places the responsibility for catching errors in the hands of the operator, or at the point of build.

2.515. Quantitative Restrictions (QRs) — Specific limits imposed by the Government authorities on the quantity or value of goods that can be imported or exported.

2.516. Quantity Discounts — An incentive offered to a buyer that results in a decreased cost per unit of goods or materials when purchased in greater numbers.

2.517. Radio Frequency Identification (RFID) — A tag for identification of objects through radio frequency technology.

NOTE — RFID tags can be active or passive. Active tags contain a power source and emit a signal constantly. Passive tags receive power from the radio waves sent by the scanner/ reader. The inherent advantages of RFID over bar code technology are:

a) the ability to be read over longer distances,
b) the elimination of requirement for "line of sight" reads,
c) added capacity to contain information, and
d) RFID tag data can be updated/changed.

2.518. Radio-frequency identification (RFID) — A sensor that uses electromagnetic fields to automatically identify and track tags attached to objects.

2.519. Rate Contract — An agreement between a procuring entity and one or more bidders which specifies the terms and conditions including the price, for the supply of a subject matter of procurement required on a recurring basis.

2.520. Rationing — A technique of allocating available stocks of product among requesting customers typically used when demand exceeds anticipated availability.

NOTE — Various formulas or strategies may be employed based on customer relationships, urgency and price.

2.521. Redistribution — A trend in the distribution business where a large "redistributor" will purchase in huge quantities from the various manufacturers and warehouse the products. Individual smaller distributors can then purchase multiple manufacturers' products from the redistributor to save on shipping costs.

2.522. Redundant Stock —– An item/part/component which is no longer used/stocked by the organization because of technical change/modification/discontinuation of a production of a product requiring their use.

NOTE — Redundant parts may have a useful life elsewhere

2.523. Re-engineering — A fundamental re-thinking and radical design of business processes to achieve substantial improvements in performance.

2.524. Reference Architecture Model Industry 4.0 (RAMI 4.0) — Reference Architectural Model developed by the German Electrical and Electronic Manufacturers' Association (ZVEI) to support Industry 4.0 initiatives with a three-dimensional map showing how to approach the deployment of Industry 4.0 in a structured manner.

2.525. Refrigerated Carriers — Container/vehicles having a temperature controlled space to store/ transport perishable goods and items requiring temperature controlled conditions for retaining their shelf life.

2.526. Regional Distribution Centre (RDC) — A collection and consolidation centre for finished goods, components and spare parts produced by a company for its own brand to be distributed to dealers, importers or its subsidiaries or other unrelated companies within or outside the country.

2.527. Registered Supplier — Any supplier who is on the list of registered supplier's of the procuring entity.

2.528. Regression Analysis — A model that works by examining the relationship between two or more specific variables. While there are variations in how a regression analysis is conducted, they all examine the influence of one or more independent variables on a dependent variable.

2.529. Regulatory Compliance — Conformance to the goal that organizations aspire to achieve in their efforts to ensure that they are aware of and take steps to comply with relevant laws, policies, and regulations.

2.530. Release Note — Document in a specified format issued by an approved manufacturer certifying that the goods have been produced as per the required specifications.

NOTE — This is a typical document relating to aviation industry.

2.531. Release-to-Start Manufacturing — Average lead time from order release to start of the manufacture process.

NOTE — This lead time may typically be required to support activities such as material movement and line changeovers.

2.532. Re-Order Level (ROL) — A predetermined stock level in a inventory control system that triggers the need to place an order.

2.533. Reorder Point (ROP) — The level of inventory which triggers an action to replenish that particular inventory stock.

2.534. Re-Order Quantity — The quantity necessary to be ordered to replenish the stock at a given time.

NOTE — Also known as Replenishment Order Quantity.

2.535. **Replenishment Cycle** — A term used in inventory management that describes the process by which stocks are resupplied from some central location or from suppliers.

2.536. Replenishment Order Quantity — *See also* **2.534**.

2.537. **Request for Information (RFI)** — A document that a company uses to request information about a product or service from suppliers.

2.538. **Request for Proposal (RFP)** — *See also* **2.362**.

NOTE — Also known as Request for Quotation (RFQ).

2.539. Request for Quotation (RFQ) — *See also* **2.362**.

NOTE — Also known as Request for Proposal (RFP).

2.540. Resilient Supply Chain — The capacity of a supply chain to persist, adapt, or transfo--rm in the face of change.

2.541. Responsiveness — The ability of the supply chain to respond purposefully and within an appropriate timeframe to customer requests or changes in the marketplace.

2.542. Retail Distribution Centre (RDC) — A product storage and shipping building that stores goods a company produces to fulfil orders for wholesale, retail, or customers.

2.543. Return Material Authorization or Return Merchandise Authorization (RMA) — A reference number provided by a supplier to a buyer authorizing him to return a product.

2.544. Return on Assets (ROA) — A financial ratio of net income to total assets that indicates how profitable a company is in relation to its total assets.

2.545. Return on Equity (ROE) — A financial ratio of a company's net income divided by its shareholders' equity.

2.546. Return on Financial Leverage (ROFL) — A financial leverage that uses the debt to buy more assets, to increase the return on equity.

2.547. Return on Invested Capital (ROIC) — The amount of money a company makes that is above the average cost it pays for its debt and equity capital.

2.548. Return on Investment (ROI) — A performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments.

2.549. Return on Net Assets (RONA) — A measure of financial performance calculated as net profit divided by the sum of fixed assets and net working capital.

2.550. Return Processing Cost — The total cost to process recall, repairs, refurbished, excess, obsolete, and End-of-Life products.

NOTE — This could include the costs of logistics support, materials, centralized functions, troubleshooting service requests, on-site diagnosis and repair, external repair, and miscellaneous. These costs are broken into Returns Order Management, Returns Inventory Carrying, Returns Material Acquisition, Finance, Planning, IT, Disposal and Warranty Costs.

2.551. Return to Vendor (RTV) — Material that has been rejected by the buyer and is awaiting shipment back to the supplier.

2.552. Returnable Transit Packaging (RTP) — A term used to describe packaging that can be re-used time and again over several years without compromising on its performance.

2.553. Returns Processing — Also known as reverse logistics involves handling of product returns, transit packaging including processes associated with repair, reuse, refurbishment, recycling, and disposal.

2.554. Reverse Auction — An online real-time purchasing technique utilized by the procuring entity to select the successful submission, which involves presentation by bidder of successively lowered bids during a scheduled period of time and the automatic evaluation of bid.

2.555. Reverse Logistics — The process of implementing, controlling, and planning the cost-effective flow of finished goods, raw materials, and in-process inventory, from the point of consumption (i.e., the customer) to the point of origin (i.e., the manufacturer), to properly dispose of these or to recapture value.

2.556. Reverse Logistics — The system of collecting, moving and performing other allied activities of the previously shipped goods, from a customer back to a manufacturer or distribution centre for repair/service/ credit or due to error in order execution.

2.557. Reverse MRP — An algorithm used in disassembly and recycling operations for scheduling the disassembly of discrete parts characterized by a well-defined product structure.

2.558. Reverse Supply Chain — The series of activities required to retrieve a used product from a customer and either dispose of it or reuse it such as in industries ranging from carpets to computers.

2.559. Right-to-Repair (RTR) — The legal concept that allows consumers to repair the products they buy or choose their own service providers instead of going through the manufacturer.

2.560. Robotics Process Automation (RPA) — Also called "software robotics" is a form of business process automation technology based on artificial intelligence (AI). RPA tools differ from such systems in that they allow data to be handled in and between multiple applications, for instance, receiving email containing an invoice, extracting the data, and then typing that into a bookkeeping system.

2.561. Rules-Based Picking Logic — A picking methodology which is based on preset rules governing the various pick strategies as per instructions given in the orders.

2.562. Running Contract — It is a contract for the supply of an approximate quantity of stores at a specified price during a certain period.

NOTE — In other words the purchaser guarantees to take quantity before expiry of contract.

2.563. Safety Inventory — A term used by logisticians to describe a level of extra stock that is maintained to mitigate risk of stockouts caused by uncertainties in supply and demand.

2.564. Safety Stock — The additional inventory held as a buffer against uncertainties in demand or in the supply system.

2.565. Sales and Operations Planning (S & OP) — An integrated business management process through which the executive/leadership team continually achieves focus, alignment, and synchronization among all functions of the organization including demand planning, production planning, inventory planning etc.

2.566. Salvage Material — An item that has value in addition to its worth as scrap.

NOTE — The item is, however, no longer useful as a unit in its present condition and whose restoration to usefulness as a unit is not economically feasible.

2.567. Scenario Building — A methodology used to anticipate a possible large scale changes that could affect an organization and develop scenarios to respond to different future situations.

2.568. SDE Analysis — A method to classify inventory according to a product’s availability in three categories, scarce (S, usually imported items that require longer lead time, difficult (D, items that require more than a fortnight to be available but less than six months lead time0, easily available (E, readily available items).

2.569. Selective Controls — A group of selective control methods in materials management such as ABC, VED, HML, SDE, GOLF, FSN, XYZ analyses based on some criterion such as cost, consumption value, criticality, etc.

2.570. Selling, General, and Administrative (SG&A) — Everyday operating expenses of running a business that are not included in the production of goods or delivery of services such as rent, salaries, advertising and marketing expenses and distribution costs.

2.571. Sensitivity Analysis (SA) — The study of effect of variation (uncertainty) in the input variables on the output values.

2.572. Sensor — A device which detects or measures a physical property and records, indicates, and produces an output signal. Sensors form the physical layer of automation pyramid in Industry 4.0.

2.573. Service Level — A performance measurement of a system with certain goals that are defined and the percentage to which those goals should be achieved such as "fill rate", "percentage of calls answered in a call centre", and "percentage of customers that do not experience a stockout".

2.574. Service Level — It is a measure in terms of the percentages of actual performance vis-à-vis the predetermined desired levels of service. In the context of material, it is the ratio of number of times the demand is met.

2.575. Service-level Agreement (SLA) — A commitment between a service provider and a client in the aspects of the quality, availability, responsibilities that are agreed between the service provider and the service user.

2.576. Shared Services — The consolidation of business operations that are used by multiple parts of the same organization such as back-office functions like Accounts Payable (AP) Accounts Receivable (AR) or Information Technology (IT) for standardization and cost efficiency.

2.577. Shared Warehouse Services — A multi-client warehousing (or shared warehousing) is the outsourced management of warehousing operations to a facility that is typically shared with multiple clients, but includes value-added services such as kitting, bulk packing, cross docking etc.

2.578. Shared-savings Contract — A contract in which "shared-savings" can benefit both buyer and supplier parties from a consumption reduction of materials making the overall supply chain more efficient.

2.579. Shelf Life — The maximum time an item can remain in store without deterioration.

2.580. Shipping Lane — A predetermined, mapped route on the ocean that commercial vessels tend to follow between ports. This helps ships avoid hazardous areas.

NOTE — In general transportation, the logical route between the point of shipment and the point of delivery used to analyze the volume of shipment between two points.

2.581. Shipping Manifest — A list prepared by the shipper giving details of the reference number of each shipping order in the load, the weight, and count of boxes or containers, and the destination.

2.582. Shortage Costs — The cost of having a shortage and not being able to meet demand from stock which may result in the cancelation of orders and heavy losses in sale which in turn may result in loss in goodwill, profit even the business itself.

2.583. Shortage Gaming — A major cause of bull-whip effect when customers place multiple orders for a product with one or more suppliers or when they place an order for more than what they want, due to the knowledge of a customer that inventory will be in short supply.

2.584. Short-term Discounting — The trade promotions which are price discounts for a limited period of time to increase sales, shift inventory from the manufacturer to the retailer and defend a brand against competition.

2.585. Simplification — The methodology that seek to reduce variation in product and process.

2.586. Simulation — The imitation of the operation of a real-world process (Ex; digital twin of a supply chain) or system over time using mathematical models that represent the key characteristics or behaviours of the selected system or process over time.

2.587. Single Data Source — Also known as "singlesource", "single source" is a database of the measurement of TV and other media/marketing exposure, and purchase behaviour, over time for the same individual or household.

2.588. Single-delivery Order — A delivery of crude petroleum in one continuous operation to one or more Consignees into a single facility, furnished by such consignee or consignees, to which the pipeline is connected.

2.589. Single-source Order — Also known as "sole source procurement" is one in which only one supplier can provide the commodity, technology and/or perform the services required.

2.590. SIPOC Analysis — The acronym SIPOC stands for suppliers, inputs, process, outputs, and customers which form the columns of the table used in process improvement.

2.591. Six-Sigma — Six Sigma is a set of techniques and tools for process improvement, introduced by American engineer Bill Smith while working at Motorola in 1986. A six-sigma process is one in which 99.99966% of all opportunities to produce some features of a part are statistically expected to be free of defects, or 3.4 defects per million opportunities.

2.592. Slotting Strategy — A strategy for the optimal placement of different products in a warehouse for easy picking, or in a retail store in the most visible and accessible shelf.

2.593. Slow Moving Inventory — Goods in stock that have had no usage activity for a specified number of days, or whose usage rate is significantly below the historical or expected average.

2.594. Slurry — Dry commodities that are made into a liquid form by the addition of water or other fluids to permit movement by pipeline.

2.595. SMART — An acronym that stands for Specific, Measurable, Achievable, Realistic, and Timely to help focus efforts of employees and increase the chances of achieving the goal.

2.596. Software as a Service (SaaS) — Also known as "on-demand software" is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted.

2.597. SOS Analysis — A classification method applied to raw materials, especially agricultural inputs that are generally classified by the seasonal (S), off-seasonal (OS) groups since the prices during the season would generally be lower.

2.598. Source-to-Pay (S2P) — A process that starts with finding, negotiating with, and contracting the supplier of goods, and culminates in final payment for those goods using big data, analytics, and digital networks to increase procurement efficiency.

2.599. Source-to-Settle (S2S) — A system that consists of requisitioning, purchasing, book-keeping and payment of vendor service/goods invoices. The cycle starts with purchase order creation, continues with receiving goods/services, and ends with proceeding payment of invoices.

2.600. Sourcing — The process of identifying suppliers and carrying out procurement process to conclude contracts for supply of goods and services.

2.601. Spatial Aggregation — A method of aggregating the demand for products from two to three areas and serving them together instead of serving these areas separately.

2.602. Special Economic Zone (SEZ) — An area in which the business and trade laws are different from the rest of the country, located within a country's national borders, and their aims include increasing trade balance, employment, increased investment, job creation and effective administration.

2.603. Spend Cube — A three-dimensional data of the spend of suppliers, corporate business units, and item categories whose output is in a graphical form.

2.604. Spot Buying — A purchase that is unplanned, often considered an "emergency" or a one-time buy.

2.605. Spot Demand — Unusual high demand for a product with a corresponding shorter lead time.

2.606. Standard Container *See also* **2.140**.

2.607. Standardization — The methodology to reduce the variability of item or processes through elimination of lesser used or slow/non-moving items by specifying an in-lieu of item, in-stock to be used.

2.608. Static Allocation — Also known as "fixed slotting" is the practice of assigning a permanent or fixed location in a warehouse for each product.

2.609. Statistical Process Control (SPC) — A method of quality control which employs statistical methods to monitor and control a process to operate efficiently producing less defects.

2.610. Statistical Quality Control (SQC) — A technique of applying statistical methods based on the theory of probability and sampling to establish quality standard and to maintain it in the most economical and effective manner throughout the whole operating process of specification, production, and inspection based on continuous testing with random samples.

2.611. Stock Cover — Refers to the amount of time that the available supply of goods in a company's inventory will last given the current rate of sales.

2.612. Stock in Transit — All goods in transit from one point in a supply chain to another supply chain destination, expressed in quantitative or financial terms.

2.613. Stock Keeping Unit (SKU) — A distinct type of item for sale, purchased, or tracked in inventory, such as a product or service, and all attributes associated with the item type that distinguish it from other item types.

2.614. Stock Order — A production order used to replenish inventory to the desired level, irrespective of the requirement from a customer.

2.615. Stock Taking — A physical count of products actually held in stock on a particular date, for verification of the stock records and accounts.

2.616. Stock Turns — A measure of the number of times inventory is sold or used in a time period such as a year.

2.617. Stockless Purchasing — A practice whereby the buyer negotiates a price for the purchases of annual requirements and the supplier owns and holds inventory until the buyer places an order for individual items.

2.618. Stockout Cost — The opportunity cost associated with not having sufficient supply to meet the actual demand.

2.619. Stockout Quantity —A stockout, or Out-Of-Stock (OOS) event, happens when the inventory is exhausted. Stockouts can happen at any stage of the supply chain, but the most visible ones are the ones at the store level, also referred to as On Shelf Availability (OSA).

2.620. Strategic Procurement — An organization-wide process that aims to ensure the timely supply of goods and services in line with the organization's business goals, while reducing risk within the supply chain.

2.621. Subcontracting — Giving work to a third party.

2.622. Subcontractor — An individual or a business that signs a contract to perform part or all of the obligations of another's contract.

2.623. Suez Canal Authority (SCA) — A state-owned authority which owns, operates, and maintains the Suez Canal, set up by the Egyptian government in the 1950s.

2.624. Supplier — Any person or organization that provides inputs of goods and/or services to a purchasing entity.

NOTE — Earlier known as vendor.

2.625. Supplier Capacity Analysis — An assessment of a supplier’s capacity *viz-a-viz* the buyer’s requirements.

2.626. Supplier Kanban — A pull-based replenishment in manufacturing systems, the "Supplier" Kanban triggers a purchase request to the supplier.

2.627. Supplier Managed Inventory (SMI) — See "Vendor Managed Inventory (VMI)".

2.628. Supplier Rating — An evaluation of a supplier based on his performance on quality, delivery, price, involvement in process improvement programs and other parameters.

NOTE — This results in rating the supplier in categories such as preferred, approved (qualified) or unsatisfactory (disqualified).

2.629. Supplier Relationship Management (SRM) — A systematic, enterprise-wide assessment of suppliers' strengths and capabilities with respect to overall business strategy, determining what activities to engage in with different suppliers, and planning and execution of all interactions with suppliers, in a coordinated fashion across the relationship life cycle, to maximize the value realized through those interactions.

2.630. Supplier-Owned Inventory — A variant of vendor-managed inventory and consignment inventory. In this case, the supplier not only manages the inventory, but also owns the stock close to or at the customer location until the point of consumption or usage by the customer.

2.631. Supply Chain — The physical, financial, and information networks that involve the movement of goods, funds, and related information through the full logistics process, from the acquisition of raw materials to delivery of finished goods to the end user. The supply chain includes all vendors, service providers, customers, and intermediaries.

2.632. Supply Chain 4.0 — The re-organization of supply chains (design and planning, production, distribution, consumption, and reverse logistics) using technologies that are known as "Industry 4.0".

2.633. Supply Chain Alignment (SCA) — SCA has two aspects. (1) Internal supply chain alignment: Getting functional areas within the company working together in support of supply chain processes. (2) External supply chain alignment: Aligning all actions and decisions with all partners such as suppliers, logistics, distribution centres in the supply chain network to make sure that customer value is delivered.

2.634. Supply Chain Analytics — Supply chain analytics is the analysis of information companies draw from several applications tied to their supply chain, including supply chain execution systems for procurement, inventory management, order management, warehouse management and fulfilment, and transportation management, shipping. There are four types of analytics: Descriptive Analytics, Diagnostic Analytics, Prescriptive Analytics and Predictive Analytics.

2.635. Supply Chain Analytics — The analysis of information, often using Artificial Intelligence (AI) tools, that companies draw from several applications tied to their supply chain, including supply chain execution systems for procurement, inventory management, order management, warehouse management and fulfilment, and transportation management and shipping.

2.636. Supply Chain Cockpit (SCC) — A graphical instrument panel for modelling, navigating, and controlling the supply chain which acts as a top planning layer through which the user can oversee other planning areas within an enterprise including demand, manufacturing, distribution, and transportation.

2.637. Supply Chain Drivers — Drivers such as production, inventory, location, transportation, and information, influence the performance of the supply chain, which companies develop and manage to arrive at the ideal balance between responsiveness and efficiency, depending on the business and financial requirements.

2.638. Supply Chain Efficiency — Refers to a business's ability to harness the resources at their disposal in the best way possible, to minimize costs and maximize profits. This is different from a supply chain's “effectiveness,” which refers to a business's ability to meet the demands of groups outside the organization.

2.639. Supply Chain Management (SCM) — The coordinated set of techniques to plan, execute and manage to and fro flow of material, information and finance in the global network right from conceiving the demand of material and services to delivery to end customers.

2.640. Supply Chain Network Design (SNDC) — Also known as “strategic supply chain planning” is the process for building and modelling the supply chain to understand the costs and time to bring goods and services to market within an organisation’s available resources.

2.641. Supply Chain Operations Reference (SCOR) — A model designed to evaluate supply chain for effectiveness and efficiency of sales and operational planning (S & OP) and intended to help standardize the process and create a measurable way to track results. SCOR 12.0 includes integrated sustainability standards using the Global Reporting Initiative (GRI), the Digital Capabilities Model (DCM) and the SCOR digital standard (SCOR DS) to address the growing need for digitalization.

2.642. Supply Chain Optimization — The method to determining the level of resources across all or part of a supply chain to achieve supply chain objectives such as minimizing total cost or maintaining a desired service level or both.

2.643. Supply Chain Performance Measurement Framework (SCPM) — A means by which a company can assess whether its supply chain has improved or degraded, measured by both quantitative and qualitative performance indicators.

2.644. Supply Chain Risk Management (SCRM) — A method of implementation strategies to manage both every day and exceptional risks along the supply chain based on continuous risk assessment with the objective of reducing vulnerability and ensuring continuity.

2.645. Supply Chain Surplus — The value addition by supply chain function of an organisation which is calculated by the following formula: Supply chain surplus = (Revenue generated from a customer - Total cost incurred to produce and deliver the product).

2.646. Supply Network Planning — See “Supply Chain Network Design (SNDC)”.

2.647. Sustainable Supply Chain — A holistic view of supply chain processes, logistics and technologies that affect the environmental, social, economic, and legal aspects of a supply chain's components with sustainability initiatives such as sourcing organic raw materials, ensuring good conditions for workers and reducing the carbon footprint.

2.648. SWOT analysis — A strategic planning and strategic management technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.

2.649. Technology-push Products — Products that involve developing an innovative technology that drives the development of new products and marketing them, or where the technology is available, and the designers make a product using it.

2.650. Temporal Aggregation — A method of aggregating the demand across multiple days and delivering the products to customers in selected time and day windows.

2.651. Theory Focused Planning (TFP) — A strategic innovation tool, developed by Vijay Govindarajan and Chris Trimble, to aid strategic experiments for growth or to pursue new ventures where no road maps exist.

2.652. Theory of Constraints (TOC) — A methodology for identifying the most important limiting factor (i.e., constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. Also see: "Optimized Production Technology (OPT)"

2.653. Third Party Inspection Agency — An outsourced agency engaged by customer to get the pre dispatch inspection carried out of the goods to be supplied by the supplier.

2.654. Third Party Logistics Provider (3PL) — An outsourced entity that manages all or a significant part of an organization's logistics requirements.

2.655. Third-party Certification (TPC) — A review by an independent organization that audits a product and its manufacturing process and has independently determined that the final product complies with specific standards for safety, quality, or performance.

2.656. Throughput — The volume of output generated by a resource in a specific period of time.

2.657. Tier-1 Supplier — A supplier who supplies the OEM directly, followed by Tier-2 and Tier-3 suppliers in the supply chain.

2.658. Tier 2 Supplier—A supplier to a tier 1 supplier.

2.659. Time Series Analysis — A set of mathematical models for demand forecasting that are used when historical data is available for a product or product line and trends are clear, businesses tend to use the time series analysis approach to demand forecasting. A time series analysis is useful for identifying base line, trend, seasonality, cyclic and random components of data.

2.660. Tolerance Clause — A clause in the contract where purchaser has an option to buy certain quantity of its original order quantity at the same terms and conditions, as applicable for the original order, within the specified period as per the contract.

2.661. Toll Manufacturers — An arrangement wherein one company with specialized resources (machinery/technicians) process raw materials or unfinished goods for a different company on an "as and when required basis" principle, which benefits both the client and the manufacturer.

2.662. Total Cost Analysis — A method used for analysing the total cost between different options based on various costs such as transportation, warehousing, inventory, taxes, duties, warranties, etc.

2.663. Total Cost Curve — The curve depicting fixed cost and variable cost for the various levels of production.

2.664. Total Cost of Ownership — Total cost of an asset throughout its lifecycle.

2.665. Total cost of ownership (TCO) — A financial estimate intended to help buyers and owners determine the direct and indirect costs of a product or service that can be used in full cost accounting including social and ecological costs.

2.666. Total Supply Chain Response Time — The lead time to rebalance the supply chain to meet a change in market demand.

2.667. Total Supply-Chain Management Cost — Total cost to manage order processing, acquire materials, manage inventory, and manage supply-chain finance, planning, and IT costs, expressed as a percent of revenue.

2.668. Traceability — The capability to trace something to verify the history, location, or application of an item by means of documented recorded identification, that is applicable to raw materials, products, supply chain, software development, healthcare, and security.

2.669. Tracking Signal (TS) — A statistical measure that monitors forecasts that have been made in comparison with actuals and warns when there are unexpected departures of the outcomes from the forecasts.

2.670. Trade Barriers — Government imposed restriction on the free international exchange of goods or services.

NOTE — Trade barriers are generally classified as

a) import policies reflected in tariffs and other import charges, quotas, import licensing, customs practices,
b) standards, testing, labelling, and various types of certification,
c) direct procurement by Government,
d) subsidies for local exporters,
e) lack of copyright protection,
f) restrictions on franchising, licensing, technology transfer, and
g) restriction on foreign direct investment, etc.

2.671. Trade-offs — A situational decision that involves diminishing or losing one quality, or quantity, or property of a set or design in return for gains in other aspects such as a trade-off between customer service levels and inventory costs for determining optimal inventory.

2.672. Transparency — Supply chain transparency refers to a system where companies know what is happening upstream in the supply chain and to communicate this knowledge both internally and externally.

2.673. Transport Corporation of India (TCI) — A public limited company headquartered in Gurugram, Haryana, India, founded in 1958, with 1400+ offices all across India with 6000+ employees, with eight divisions, namely: TCI Freight, TCI Express (formerly TCI XPS), TCI Supply Chain Solution, TCI Global, TCI Seaways and TCI Foundation. TCI Group manages 11.5 million sq. ft. of warehousing space and mainly caters to industries such as retail, pharmaceuticals, auto, hi-tech, cold chain, and consumer products.

2.674. Transport Management System (TMS) — A management system that is a subset of supply chain management concerning transportation operations such as a software module to plan vehicle loads and routing which may be part of an enterprise resource planning system (ERP).

2.675. Trans-shipment — Movement of goods from one set of vehicles to another for onward delivery.

2.676. Triple Bottom Line — A system to evaluate a company against social, economic, and environmental criteria.

2.677. Turnaround Time (TAT) — The time is the amount of time taken to complete a process or fulfil a request.

2.678. Two Bin Inventory System — An inventory system that uses two physical bins, one of which holds the stock equivalent to the consumption during the lead time.

2.679. Unit Load Device (ULD) — It refers to cargo containers, pallets of standard size for easy transportation and to avoid transit damage.

NOTE — This is typical to airfreight industry. The outer shape fits the internal wall con-tours of a cargo hold of the aircraft.

2.680. Unitization — The process of bundling of items/boxes together on a pallet or a container for easier and economical transportation.

2.681. Universal Product Code (UPC) — A barcode symbology with 12 digits that are uniquely assigned to each trade item that is widely used worldwide for tracking trade items in stores.

2.682. Unmanned Aerial Vehicle (UAV) — Also known as a drone, is an aircraft without any human pilot, crew, or passengers on board. UAVs are a component of an unmanned aircraft system, which include additionally a ground-based controller and a system of communications with the UAV.

2.683. Validity of Offer — A date fixed in tender forms/offer up to which the bids are open for acceptance.

2.684. Value Added Reseller — A company that adds features or services to an existing product, then resells it as an integrated product or complete "turn-key" solution.

2.685. Value Analysis — The organized use of methodologies that focus on the function of a goods, processes or services in providing value to the customer. It attempts to define cost, quality and customer acceptance parameters in determining the value and possible redesign or reengineering of a given function.

2.686. Value Analysis and Value Engineering (VA/VE) — A systematic method to improve the "value" (the ratio of function to cost) of goods or products and services by using an examination of function and increasing value by either improving the function or reducing the cost.

2.687. Value Drivers — The five supply chain drivers (Production, Inventory, Location, Transportation, and Information), influence the performance of a supply chain and by managing these drivers companies can achieve an ideal balance between responsiveness and efficiency.

2.688. Value Engineering — The systematic application of recognized techniques which identify the functions of the product or service, establish the work of those functions, and provide the necessary functions to meet the required performance at the lowest overall cost.

> NOTE — Value engineering can also achieve enhanced value by improving the functions that are desired by the customer even at an increased cost

2.689. Value Network Management — A system with a set of connections between organizations and/or individuals interacting with each other to benefit the entire group, represented by a mapping tool showing nodes (members) and connectors (relationships). A value network allows members to buy and sell products as well as share information.

2.690. Value Stream Mapping (VSM) — A “lean thinking” tool that employs a flowchart documenting every step in the process to identify waste, reduce process cycle times, and implement process improvement.

2.691. Value-adding Services — A feature that can be added to a core product to enhance the user experience or a service at little or no cost, to promote the primary business.

2.692. Variable Cost — A cost that is proportionate to the volume of production of goods/services.

> NOTE — The cost is primarily towards direct material cost/ labour cost.

2.693. Variety Rationalization — The selection of the optimum number of sizes and other characteristics or types of a product required to meet prevailing needs.

2.694. VED Analysis — A method to classify inventory according to relative importance of certain items to other items, like spare parts in three categories, vital (V, inventory that needs to kept in stock consistently), essential (E, keeping a minimum supply of this inventory), desirable (D, operations can run with or without it).

2.695. Vendor Managed Inventory (VMI) — An inventory management practice in which a supplier of goods, usually the manufacturer, is responsible for optimizing the inventory held by a distributor or where vendors use a buyer's premises to store products and supply.

2.696. Vendor Managed Inventory (VMI) — An inventory management system in which a supplier maintains and manages the inventory of items at the customer's premises, including timely replenishments.

NOTE — Payment of the goods are made based on the actual issues made from this inventory.

2.697. Vertical Integration — A strategy that allows a company to streamline its operations by taking direct ownership of various stages of its production process rather than relying on external contractors or suppliers.

2.698. Vested Outsourcing — A hybrid business model in which contracting parties create a formal relational contract using shared values and goals and outcome-based economics to create an agreement that is mutually beneficial for each party.

2.699. Vision Picking — Also known as "pick-by-vision", is a method for picking products in a warehouse works by providing order pickers with guided visual cues projected on their Head-Mounted Displays (HMD) throughout the picking journey.

2.700. Volatility, Uncertainty, Complexity and Ambiguity (VUCA) — An acronym first used in 1987, describes the situation of constant, unpredictable change that is now the norm in certain industries and areas of the business world with a guideline that companies should avoid traditional, outdated approaches to management and leadership, and day-to-day working.

2.701. Warehouse Management System (WMS) — A software solution that offers visibility into a business' entire inventory and manages supply chain fulfilment operations from the distribution centre to the customer or a store shelf.

2.702. Warehouse Management System (WMS) — An integrated set of system designed to locate, put away, move, pick and cycle count/inventory verification activities of a warehouse or distribution center.

2.703. Warehousing Education and Research Council (WERC) — Founded in 1977, with the objectives of education, research, and networking opportunities in the field of warehousing.

2.704. Warranty — A specific assurance made by the seller concerning the performance, quality, or nature of the goods or services sold. An expressed warranty often delineates the rights and obligations of the parties in the event of defective items or services.

2.705. Waste Electrical and Electronic Equipment (WEEE) Directive — The European Community Directive on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive, became European Law in February 2003. The WEEE Directive set collection, recycling, and recovery targets for all types of electrical goods and set restrictions upon European manufacturers as to the material content of new electronic equipment placed on the market

2.706. Waybill — Document containing description of goods that are a part of common carrier freight shipment. Show origin, destination, consignee/consignor, and amount charged. Copies of this document accompany the goods and are retained by originating/delivering agents.

2.707. White Glove Service (WGS) — Also known as white glove transport, provides the most tailored and specific deliveries possible offering tailored delivery, installation and setup and even haul-away debris. White glove means going the extra mile in the final mile.

2.708. Work in Process (WIP) — Material that has been partially processed but not yet transformed into end product.

2.709. World Economic Forum (WEF) — An international non-governmental and lobbying organisation based in Cologny, canton of Geneva, Switzerland, founded in 1971, funded by its 1,000 member companies and public subsidies, views its own mission as “improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas”.

2.710. XYZ Analysis — An analysis based on the value of inventory undertaken during the closing of annual accounts. X items are those having high value, Y items are those whose inventory values are medium and Z items are those whose inventory values are low.

2.711. Zero Inventory — A business strategy, also known as “Just-in-Time (JIT) system” where companies aspire to hold little or no on-hand inventory stock, with methods to order the exact quantity that will be sold and receive goods into stock when they are needed.

2.712. Zero-based Budget (ZBB) — A method of budgeting in which all expenses must be justified for each new period, and the budgets are then built around what is needed for the upcoming period, regardless of whether each budget is higher or lower than the previous one.

ANNEX A
COMMITTEE COMPOSITION
Management and Productivity, MSD 04

Organization(s)	*Representative(s)*
Indian School of Business, Hyderabad	Prof. Chandan Chaudhary *(Chairman)* Shri Rajendra Srivastava *(Alt)* Prof. Pratap Sunder *(Alt)*
Amity University, Noida	Dr. Sanjeev Bansal Dr. Vijit Chaturvedi *(Alt.)*
Bharat Electronics Ltd., Bangalore	Ms Ekta Bhardwaj
Bharat Heavy Electricals Ltd., New Delhi	Shri Jagdish Prasad
Center for Reliability and Diagnostics, Mumbai	Dr. Tarapada Pyne
CII, New Delhi	Shri Vipin Sahni Shri Virender Singh *(Alt.)*
Cognizant Business Continuity Management, Chennai	Shri R. Vaidhyanathan
Ministry of Labour & Employment, New Delhi	Dr. R. N. Meena Shri Upendra Singh (Alt.)
Directorate General of Quality Assurance, Bangalore	Dr. N K Murthy
Dr Reddy Laboratories, Baddi	Shri Pranav Kumar
Engineers India Ltd., New Delhi	Shri S.K. Handa Shri K.N. Choudhary*(Alt.)*
Indian Institute of Materials Management, New Delhi	Shri V.K. Jain
Indian Institute of Finance, New Delhi	Prof. Aman Agarwal
Infosys BPM Ltd., Bangalore	Shri Rajeev Thykatt
Infosys Ltd. Bangalore	Ms. Keerthana Mainkar Shri Alexander Chacko*(Alt.)*
International Institution of Technology and Management	Shri V. K. Gupta
International Management Institute, Nagpur	Dr B A Metri
Maruti Suzuki India Ltd., Gurgaon	Ms. Anuradha Sharma Shri Ravi Kant Yadav (*Alt.*) Shri Prag Basil (*Alt.*) Shri Shobhit Manori (*Alt*.)
Microsoft Corporation India Pvt. Ltd., New Delhi	Shri Samik Roy, Shri Dhiraj Gyani *(Alt.)*
National Productivity Council, New Delhi	ShriShri N.K. Chanji Shri Kumud Jacob Lugun*(Alt.)*

Hitachi ABB Power grid, New Delhi,	ShriShri Mukesh Arora
Ordnance Factory Board, Kolkata	Dr. Onkar.S. Mondhe, Dr. H. S. Negi *(Alt.)*
Paramount Dataware Pvt. Ltd., Chennai	Ms. Manjula Subramanian
Panacea Medical Technologies Private Limited, Bengaluru	Shri G V Shubhramaniam
Pidilite Industries, New Delhi.	ShriK. Swaminathan Shri Pratyaya Chakrabarti *(Alt.)*
Siemens Ltd., Maharashtra	Shri S. Venkatesh Shri Manoj Belgaonkar (Alt)
The Institute of Chartered Accountants of India (ICAI), New Delhi.	CA.(Dr.) Sanjeev Kumar Singhal
In personal capacity, Lucknow	Prof Subrata Chakraborty
In personal capacity, New Delhi	Shri Balraj Seth
In personal capacity, New Delhi	Prof. Ved Prakash
In personal capacity, New Delhi	Shri Rajib Kumar Debnath
In personal capacity, New Delhi	Ms. Renu Sharma
In personal capacity, New Delhi	Shri Anupam Kaul
In personal capacity, Howrah	Md Moin
BIS Directorate General	Mr. Anuj Swarup Bhatnagar , Scientist ‘F’ and Head (MSD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri Ashish V Urewar,
Scientist ‘C’ (Management and Systems), BIS