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FFOOD & BEVERAGES INVENTORY CONTROL

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FOOD & BEVERAGES INVENTORY CONTROL

CONTENTS

UNIT 1: INVENTORY CONTROL CONCEPTS

1.00 INTRODUCTION

In this unit we will study the various concepts related to inventory and inventory control. A simple way of looking at inventory is like a list of various physical objects used by the business for reselling or repairing. In hotels and restaurants we have inventoy like the stock of consumables (edibles, washing agents, etc) as well as fabrics, equipments, furniture and fixtures. It is a practice to keep stock of the items in the hotels or restaurant and keep a check on their quantity availability to ensure that business is able to give proper service to its customer. If you do not keep periodic record of inventory, it may happen that suddenly washing powder runs out and you have to rush to purchase it. Similarly keeping periodic check on inventory or stock allows you to know if an item is stolen.

Close to the concept of inventory control is the concept of valuation. In any business dealing it is important that you do valuation of the business house. As a hotelier suppose you wish to acquire another hotel by purchase, you would like to know the fair price which you may pay. For this you need to know how valuation is carried out, what the various assumptions of valuations are and similar things.

Hence it is important that you go through this unit carefully. The concepts learned in this unit would be very helpful to you as a professional as well as in understanding various concepts in other courses of the program.

1.01 UNIT OBJECTIVES

After completing this Unit, you will be able to

- Explain what is meant by Inventory control
- Discuss the concept of Periodic inventory
- Elaborate the importance of Physical inventory
- Discuss the meaning of Stock-taking
- Describe the concept of Inventory
- Explain the importance of Valuation (finance)

1.02 INVENTORY

Inventory (American English) or stock (British English) is the goods and materials that a business holds for the ultimate goals to have a purpose of resale (or repair).

Inventory management is a discipline primarily about specifying the shape and placement of stocked goods. It is required at different locations within a facility or within many locations of a supply network to precede the regular and planned course of production and stock of materials.

The concept of inventory, stock or work-in-process has been extended from manufacturing systems to service businesses and projects, by generalizing the definition to be "all work within the process of

production- all work that is or has occurred prior to the completion of production." In the context of a manufacturing production system, inventory refers to all work that has occurred - raw materials, partially finished products, finished products prior to sale and departure from the manufacturing system. In the context of services, inventory refers to all work done prior to sale, including partially process information.

Definition

The scope of inventory management concerns the balance between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space, quality management, replenishment, returns and defective goods, and demand forecasting. Balancing these competing requirements leads to optimal inventory levels, which is an ongoing process as the business needs shift and react to the wider environment.

Inventory management involves a retailer seeking to acquire and maintain a proper merchandise assortment while ordering, shipping, handling and related costs are kept in check. It also involves systems and processes that identify inventory requirements, set targets, provide replenishment techniques, report actual and projected inventory status and handle all functions related to the tracking and management of material. This would include the monitoring of material moved into and out of stockroom locations and the reconciling of the inventory balances. It also may include ABC analysis, lot tracking, cycle counting support, etc. Management of the inventories, with the primary objective of determining/controlling stock levels within the physical distribution system, functions to balance the need for product availability against the need for minimizing stock holding and handling costs.

Business inventory

Reasons for keeping stock

There are five basic reasons for keeping an inventory

Time - The time lags present in the supply chain, from supplier to user at every stage, requires that you maintain certain amounts of inventory to use in this lead time. However, in practice, inventory is to be maintained for consumption during 'variations in lead time'. Lead time itself can be addressed by ordering that many days in advance.

Seasonal Demand: demands varies periodically, but producers capacity is fixed. This can lead to stock accumulation, consider for example how goods consumed only in holidays can lead to accumulation of large stocks on the anticipation of future consumption.

Uncertainty - Inventories are maintained as buffers to meet uncertainties in demand, supply and movements of goods.

Economies of scale - Ideal condition of "one unit at a time at a place where a user needs it, when he needs it" principle tends to incur lots of costs in terms of logistics. So bulk buying, movement and storing brings in economies of scale, thus inventory.

Appreciation in Value - In some situations, some stock gains the required value when it is kept for some time to allow it reach the desired standard for consumption, or for production. For example; beer in the brewing industry

All these stock reasons can apply to any owner or product.

Special terms used in dealing with inventory management

Stock Keeping Unit (SKU) SKUs are clear, internal identification numbers assigned to each of the products and their variants. SKUs can be any combination of letters and numbers chosen, just as long as the system is consistent and used for all the products in the inventory.

Stockout means running out of the inventory of an SKU.

"New old stock" (sometimes abbreviated NOS) is a term used in business to refer to merchandise being offered for sale that was manufactured long ago but that has never been used. Such merchandise may not be produced anymore, and the new old stock may represent the only market source of a particular item at the present time.

Typology

- Buffer/safety stock
- Reorder level
- Cycle stock (Used in batch processes, it is the available inventory, excluding buffer stock)
- De-coupling (Buffer stock held between the machines in a single process which serves as a buffer for the next one allowing smooth flow of work instead of waiting the previous or next machine in the same process)
- Anticipation stock (Building up extra stock for periods of increased demand - e.g. ice cream for summer)
- Pipeline stock (Goods still in transit or in the process of distribution - have left the factory but not arrived at the customer yet)
- Average Daily/Weekly usage quantity X Lead time in days + Safety stock

Inventory examples

While accountants often discuss inventory in terms of goods for sale, organizations - manufacturers, service-providers and not-for-profits - also have inventories (fixtures, furniture, supplies, etc.) that they do not intend to sell. Manufacturers', distributors', and wholesalers' inventory tends to cluster in warehouses. Retailers' inventory may exist in a warehouse or in a shop or store accessible to customers. Inventories not intended for sale to customers or to clients may be held in any premises an organization uses. Stock ties up cash and, if uncontrolled, it will be impossible to know the actual level of stocks and therefore impossible to control them.

While the reasons for holding stock were covered earlier, most manufacturing organizations usually divide their "goods for sale" inventory into:

- Raw materials - materials and components scheduled for use in making a product.
- Work in process, WIP - materials and components that have begun their transformation to finished goods.
- Finished goods - goods ready for sale to customers.
- Goods for resale - returned goods that are salable.
- Stocks in transit.
- Consignment stocks.
- Maintenance supply.

For example:

Manufacturing

A canned food manufacturer's materials inventory includes the ingredients to form the foods to be canned, empty cans and their lids (or coils of steel or aluminum for constructing those components), labels, and anything else (solder, glue, etc.) that will form part of a finished can. The firm's work in process includes those materials from the time of release to the work floor until they become complete and ready for sale to wholesale or retail customers. This may be vats of prepared food, filled cans not yet labeled or sub-assemblies of food components. It may also include finished cans that are not yet packaged into cartons or pallets. Its finished good inventory consists of all the filled and labeled cans of food in its warehouse that it has manufactured and wishes to sell to food distributors (wholesalers), to grocery stores (retailers), and even perhaps to consumers through arrangements like factory stores and outlet centers.

Capital Projects

The partially completed work (or Work in Process) is a measure of inventory built during the work execution of a capital project, such as encountered in civilian infrastructure construction or oil & gas. Inventory may not only reflect physical items (such as materials, parts, partially-finished sub-assemblies) but also knowledge work-in-process (such as partially completed engineering designs of components and assemblies to be fabricated).

Virtual inventory

A "virtual inventory" (also known as a "bank inventory") enables a group of users to share common parts, especially where their availability at short notice may be critical but they are unlikely to required by more than a few bank members at any one time.

Costs associated with inventory

There are several costs associated with inventory:

Ordering cost

- Setup cost
- Holding Cost
- Shortage Cost

Principle of inventory proportionality

Purpose

Inventory proportionality is the goal of demand-driven inventory management. The primary optimal outcome is to have the same number of days' (or hours', etc.) worth of inventory on hand across all products so that the time of runout of all products would be simultaneous. In such a case, there is no "excess inventory," that is, inventory that would be left over of another product when the first product runs out. Excess inventory is sub-optimal because the money spent to obtain it could have been utilized better elsewhere, i.e. to the product that just ran out.

The secondary goal of inventory proportionality is inventory minimization. By integrating accurate demand forecasting with inventory management, rather than only looking at past averages, a much more accurate and optimal outcome is expected.

Integrating demand forecasting into inventory management in this way also allows for the prediction of the "can fit" point when inventory storage is limited on a per-product basis.

Applications

The technique of inventory proportionality is most appropriate for inventories that remain unseen by the consumer, as opposed to "keep full" systems where a retail consumer would like to see full shelves of the product they are buying so as not to think they are buying something old, unwanted or stale; and differentiated from the "trigger point" systems where product is reordered when it hits a certain level; inventory proportionality is used effectively by just-in-time manufacturing processes and retail applications where the product is hidden from view.

One early example of inventory proportionality used in a retail application in the United States was for motor fuel. Motor fuel (e.g. gasoline) is generally stored in underground storage tanks. The motorists do not know whether they are buying gasoline off the top or bottom of the tank, nor need they care. Additionally, these storage tanks have a maximum capacity and cannot be overfilled. Finally, the product is expensive. Inventory proportionality is used to balance the inventories of the different grades of motor fuel, each stored in dedicated tanks, in proportion to the sales of each grade. Excess inventory is not seen or valued by the consumer, so it is simply cash sunk (literally) into the ground. Inventory proportionality minimizes the amount of excess inventory carried in underground storage tanks. This application for motor fuel was first developed and implemented by Petrolsoft Corporation in 1990 for Chevron Products Company. Most major oil companies use such systems today.

Roots

The use of inventory proportionality in the United States is thought to have been inspired by Japanese just-in-time parts inventory management made famous by Toyota Motors in the 1980s.

High-level inventory management

It seems that around 1880 there was a change in manufacturing practice from companies with relatively homogeneous lines of products to horizontally integrated companies with unprecedented diversity in processes and products. Those companies (especially in metalworking) attempted to achieve success through economies of scope - the gains of jointly producing two or more products in one facility. The managers now needed information on the effect of product-mix decisions on overall profits and therefore needed accurate product-cost information. A variety of attempts to achieve this were unsuccessful due to the huge overhead of the information processing of the time. However, the burgeoning need for financial reporting after 1900 created unavoidable pressure for financial accounting of stock and the management need to cost manage products became overshadowed. In particular, it was the need for audited accounts that sealed the fate of managerial cost accounting. The dominance of financial reporting accounting over management accounting remains to this day with few exceptions, and the financial reporting definitions of 'cost' have distorted effective management 'cost' accounting since that time. This is particularly true of inventory.

Hence, high-level financial inventory has these two basic formulas, which relate to the accounting period:

Cost of Beginning Inventory at the start of the period + inventory purchases within the period + cost of production within the period = cost of goods available

Cost of goods available − cost of ending inventory at the end of the period = cost of goods sold

The benefit of these formulas is that the first absorbs all overheads of production and raw material costs into a value of inventory for reporting. The second formula then creates the new start point for the next period and gives a figure to be subtracted from the sales price to determine some form of sales-margin figure.

Manufacturing management is more interested in *inventory turnover ratio* or *average days to sell inventory* since it tells them something about relative inventory levels.

Inventory turnover ratio (also known as inventory turns) = cost of goods sold / Average Inventory = Cost of Goods Sold / ((Beginning Inventory + Ending Inventory) / 2)

and its inverse

Average Days to Sell Inventory = Number of Days a Year / Inventory Turnover Ratio = 365 days a year / Inventory Turnover Ratio

This ratio estimates how many times the inventory turns over a year. This number tells how much cash/goods are tied up waiting for the process and is a critical measure of process reliability and effectiveness. So a factory with two inventory turns has six months stock on hand, which is generally not a good figure (depending upon the industry), whereas a factory that moves from six turns to twelve turns has probably improved effectiveness by 100%. This improvement will have some negative results in the financial reporting, since the 'value' now stored in the factory as inventory is reduced.

While these accounting measures of inventory are very useful because of their simplicity, they are also fraught with the danger of their own assumptions. There are, in fact, so many things that can vary hidden under this appearance of simplicity that a variety of 'adjusting' assumptions may be used. These include:

- Specific Identification
- Lower of cost or market
- Weighted Average Cost
- Moving-Average Cost
- FIFO and LIFO.

Inventory Turn is a financial accounting tool for evaluating inventory and it is not necessarily a management tool. Inventory management should be forward looking. The methodology applied is based on historical cost of goods sold. The ratio may not be able to reflect the usability of future production demand, as well as customer demand.

Business models, including Just in Time (JIT) Inventory, Vendor Managed Inventory (VMI) and Customer Managed Inventory (CMI), attempt to minimize on-hand inventory and increase inventory turns. VMI and CMI have gained considerable attention due to the success of third-party vendors who offer added expertise and knowledge that organizations may not possess.

Inventory management in modern days is online oriented and more viable in digital. This type of dynamics order management will require end-to-end visibility, collaboration across fulfillment processes, real-time data automation among different companies, and integration among multiple systems.

Accounting for inventory

Each country has its own rules about accounting for inventory that fit with their financial-reporting rules.

For example, organizations in the U.S. define **inventory** to suit their needs within US Generally Accepted Accounting Practices (GAAP), the rules defined by the Financial Accounting Standards Board (FASB) (and others) and enforced by the U.S. Securities and Exchange Commission (SEC) and other federal and state agencies. Other countries often have similar arrangements but with their own accounting standards and national agencies instead.

It is intentional that financial accounting uses standards that allow the public to compare firms' performance, cost accounting functions internally to an organization and potentially with much greater flexibility. A discussion of inventory from standard and Theory of Constraints-based (throughput) cost accounting perspective follows some examples and a discussion of inventory from a financial accounting perspective.

The internal costing/valuation of inventory can be complex. Whereas in the past most enterprises ran simple, one-process factories, such enterprises are quite probably in the minority in the 21st century. Where 'one process' factories exist, there is a market for the goods created, which establishes an independent market value for the good. Today, with multistage-process companies, there is much inventory that would once have been finished goods which is now held as 'work in process' (WIP). This needs to be valued in the accounts, but the valuation is a management decision since there is no market for the partially finished product. This somewhat arbitrary 'valuation' of WIP combined with the allocation of overheads to it has led to some unintended and undesirable results.

Financial accounting

An organization's inventory can appear a mixed blessing, since it counts as an asset on the balance sheet, but it also ties up money that could serve for other purposes and requires additional expense for its protection. Inventory may also cause significant tax expenses, depending on particular countries' laws regarding depreciation of inventory, as in Thor Power Tool Company v. Commissioner.

Inventory appears as a current asset on an organization's balance sheet because the organization can, in principle, turn it into cash by selling it. Some organizations hold larger inventories than their operations require in order to inflate their apparent asset value and their perceived profitability.

In addition to the money tied up by acquiring inventory, inventory also brings associated costs for warehouse space, for utilities, and for insurance to cover staff to handle and protect it from fire and other disasters, obsolescence, shrinkage (theft and errors), and others. Such holding costs can mount up: between a third and a half of its acquisition value per year.

Businesses that stock too little inventory cannot take advantage of large orders from customers if they cannot deliver. The conflicting objectives of cost control and customer service often pit an organization's financial and operating managers against its sales and marketing departments. Salespeople, in particular, often receive sales-commission payments, so unavailable goods may reduce their potential personal income. This conflict can be minimised by reducing production time to

being near or less than customers' expected delivery time. This effort, known as "Lean production" will significantly reduce working capital tied up in inventory and reduce manufacturing costs (See the Toyota Production System).

Role of inventory accounting

By helping the organization to make better decisions, the accountants can help the public sector to change in a very positive way that delivers increased value for the taxpayer's investment. It can also help to incentive's progress and to ensure that reforms are sustainable and effective in the long term, by ensuring that success is appropriately recognized in both the formal and informal reward systems of the organization.

To say that they have a key role to play is an understatement. Finance is connected to most, if not all, of the key business processes within the organization. It should be steering the stewardship and accountability systems that ensure that the organization is conducting its business in an appropriate, ethical manner. It is critical that these foundations are firmly laid. So often they are the litmus test by which public confidence in the institution is either won or lost.

Finance should also be providing the information, analysis and advice to enable the organizations' service managers to operate effectively. This goes beyond the traditional preoccupation with budgets – how much have we spent so far, how much do we have left to spend? It is about helping the organization to better understand its own performance. That means making the connections and understanding the relationships between given inputs – the resources brought to bear – and the outputs and outcomes that they achieve. It is also about understanding and actively managing risks within the organization and its activities.

FIFO vs. LIFO accounting

When a merchant buys goods from inventory, the value of the inventory account is reduced by the cost of goods sold (COGS). This is simple where the cost has not varied across those held in stock; but where it has, then an agreed method must be derived to evaluate it. For commodity items that one cannot track individually, accountants must choose a method that fits the nature of the sale. Two popular methods in use are: FIFO (first in - first out) and LIFO (last in - first out).

FIFO treats the first unit that arrived in inventory as the first one sold. LIFO considers the last unit arriving in inventory as the first one sold. Which method an accountant selects can have a significant effect on net income and book value and, in turn, on taxation. Using LIFO accounting for inventory, a company generally reports lower net income and lower book value, due to the effects of inflation. This generally results in lower taxation. Due to LIFO's potential to skew inventory value, UK GAAP and IAS have effectively banned LIFO inventory accounting. LIFO accounting is permitted in the United States subject to section 472 of the Internal Revenue Code.

Standard cost accounting

Standard cost accounting uses ratios called efficiencies that compare the labour and materials actually used to produce a good with those that the same goods would have required under "standard" conditions. As long as actual and standard conditions are similar, few problems arise. Unfortunately, standard cost accounting methods developed about 100 years ago, when labor comprised the most important cost in manufactured goods. Standard methods continue to emphasize labor efficiency even though that resource now constitutes a (very) small part of cost in most cases.

Standard cost accounting can hurt managers, workers, and firms in several ways. For example, a policy decision to increase inventory can harm a manufacturing manager's performance evaluation. Increasing inventory requires increased production, which means that processes must operate at higher rates. When (not if) something goes wrong, the process takes longer and uses more than the standard labor time. The manager appears responsible for the excess, even though s/he has no control over the production requirement or the problem.

In adverse economic times, firms use the same efficiencies to downsize, rightsize, or otherwise reduce their labor force. Workers laid off under those circumstances have even less control over excess inventory and cost efficiencies than their managers.

Many financial and cost accountants have agreed for many years on the desirability of replacing standard cost accounting. They have not, however, found a successor.

Theory of constraints cost accounting

Eliyahu M. Goldratt developed the Theory of Constraints in part to address the cost-accounting problems in what he calls the "cost world." He offers a substitute, called throughput accounting, that uses throughput (money for goods sold to customers) in place of output (goods produced that may sell or may boost inventory) and considers labor as a fixed rather than as a variable cost. He defines inventory simply as everything the organization owns that it plans to sell, including buildings, machinery, and many other things in addition to the categories listed here. Throughput accounting recognizes only one class of variable costs: the truly variable costs, like materials and components, which vary directly with the quantity produced

Finished goods inventories remain balance-sheet assets, but labor-efficiency ratios no longer evaluate managers and workers. Instead of an incentive to reduce labor cost, throughput accounting focuses attention on the relationships between throughput (revenue or income) on one hand and controllable operating expenses and changes in inventory on the other.

National accounts

Inventories also play an important role in national accounts and the analysis of the business cycle. Some short-term macroeconomic fluctuations are attributed to the inventory cycle.

Distressed inventory

Also known as distressed or expired stock, distressed inventory is inventory whose potential to be sold at a normal cost has passed or will soon pass. In certain industries it could also mean that the stock is or will soon be impossible to sell. Examples of distressed inventory include products which have reached their expiry date, or have reached a date in advance of expiry at which the planned market will no longer purchase them (e.g. 3 months left to expiry), clothing which is out of fashion, music which is no longer popular and old newspapers or magazines. It also includes computer or consumer-electronic equipment which is obsolete or discontinued and whose manufacturer is unable to support it, along with products which use that type of equipment e.g. VHS format equipment and videos.

In 2001, Cisco wrote off inventory worth US $2.25 billion due to duplicate orders. This is considered one of the biggest inventory write-offs in business history.

Stock Rotation

Stock Rotation is the practice of changing the way inventory is displayed on a regular basis. This is most commonly used in hospitality and retail - particularity where food products are sold. For example, in the case of supermarkets that a customer frequents on a regular basis, the customer may know exactly what they want and where it is. This results in many customers going straight to the product they seek and do not look at other items on sale. To discourage this practice, stores will rotate the location of stock to encourage customers to look through the entire store. This is in hopes the customer will pick up items they would not normally see.

Inventory credit

Inventory credit refers to the use of stock, or inventory, as collateral to raise finance. Where banks may be reluctant to accept traditional collateral, for example in developing countries where land title may be lacking, inventory credit is a potentially important way of overcoming financing constraints. This is not a new concept; archaeological evidence suggests that it was practiced in Ancient Rome. Obtaining finance against stocks of a wide range of products held in a bonded warehouse is common in much of the world. It is, for example, used with Parmesan cheese in Italy. Inventory credit on the basis of stored agricultural produce is widely used in Latin American countries and in some Asian countries. A precondition for such credit is that banks must be confident that the stored product will be available if they need to call on the collateral; this implies the existence of a reliable network of certified warehouses. Banks also face problems in valuing the inventory. The possibility of sudden falls in commodity prices means that they are usually reluctant to lend more than about 60% of the value of the inventory at the time of the loan.

CHECK YOUR PROGRESS

Define “inventory” and ‘inventory management’.

Explain reasons for keeping inventory

Describe the various types of inventory

What is the use of ‘blank’ or ‘virtual’ inventory?

What is the purpose of Inventory proportionality? Explain using example.

Describe the various tools used in inventory management.

What is the role of inventory accounting?

Explain the concept of LIFO and FIFO accounting.

Describe the concept of Standard cost accounting in inventory accounting practice.

Elaborate the theory of constrain cost accounting.

Explain inventory credit.

1.03 INVENTORY CONTROL

Inventory control or **stock control** can be broadly defined as "the activity of checking a shop's stock". More specifically inventory control may refer to:

- In operations management, logistics and supply chain management, the technological system and the programmed software necessary for managing inventory
- In economics and operations management, the inventory control problem, which aims to reduce overhead cost without hurting sales. It answers the 3 basic questions of any supply chain: When? Where? How much?
- In the field of loss prevention, systems designed to introduce technical barriers to shoplifting

Systems

Inventory control is also about knowing where all stock is and ensuring everything is accounted for at any given time. An *inventory control system or a computerized inventory system* is a process for managing and locating objects or materials. In common usage, the term may also refer to just the software components. Many shops now use stock control systems. The term "stock control system" can be used to include various aspects of controlling the amount of stock on the shelves and in the stockroom and how reordering happens. Typical features of stock control software include:

- Ensuring that the products are on the shelf in shops in just the right quantity.
- Recognizing when a customer has bought a product.
- Automatically signalling when more products need to be put on the shelf from the stockroom.
- Automatically reordering stock at the appropriate time from the main warehouse.
- Automatically producing management information reports that could be used both by local managers and at head office.

These might detail what has sold, how quickly and at what price, for example. Reports could be used to predict when to stock up on extra products, for example, at Christmas or to make decisions about special offers, discontinuing products and so on. Sending reordering information not only to the warehouse but also directly to the factory producing the products enables them to optimize production.

Fig 1.01: Wireless bar-code reader with docking station.

Modern inventory control systems often rely upon barcodes and radio-frequency identification (RFID) tags to provide automatic identification of inventory objects. Inventory objects could include any kind of physical asset: merchandise, consumables, fixed assets, circulating tools, library books, or capital equipment. To record an inventory transaction, the system uses a barcode scanner or RFID reader to automatically identify the inventory object, and then collects additional information from the operators via fixed terminals (workstations), or mobile computers. The new trend in inventory management is to label inventory and assets with QR Code, and use smart-phones to keep track of inventory count and movement. These new systems are especially useful for field service operations, where an employee needs to record inventory transaction or look up inventory stock in the field, away from the computers and hand-held scanners.

Advantages and disadvantages

Stock control systems ensure that shelves are appropriately stocked. If there is too much stock, it ties up a company's money, money that might be better spent on reducing their overdraft, on advertising the business or on paying for better facilities for customers, for example. Too much stock means that some perishable products might not sell and would have to be thrown away and this would reduce a stock control system outweigh the disadvantages.

Inventory optimization

Inventory optimization is a method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account.

Inventory management software

Inventory management software is a computer-based system for tracking inventory levels, orders, sales and deliveries. It can also be used in the manufacturing industry to create a work order, bill of materials and other production-related documents. Companies use inventory management software to avoid product overstock and outages. It is a tool for organizing inventory data that before was generally stored in hard-copy form or in spreadsheets. It is often associated with and is similar to distribution software, as distributors that can compete with less cash tied up in inventories have a distinct advantage over their competitors.

CHECK YOUR PROGRESS

Define ‘inventory control’.

Describe the inventory control system.

What are the advantages and disadvantages of inventory control system?

1.04 PERIODIC INVENTORY

Periodic inventory is a system of inventory in which updates are made on a periodic basis. This differs from perpetual inventory systems, where updates are made as seen fit.

In a periodic inventory system no effort is made to keep up-to-date records of either the inventory or the cost of goods sold. Instead, these amounts are determined only periodically - usually at the end of each year. This physical count determines the amount of inventory appearing in the balance sheet. The cost of goods sold for the entire year then is determined by a short computation.

1.05 PHYSICAL INVENTORY

Physical inventory is a process where a business physically counts its entire inventory. A physical inventory may be mandated by financial accounting rules or the tax regulations to place an accurate value on the inventory, or the business may need to count inventory so component parts or raw materials can be restocked. Businesses may use several different tactics to minimize the disruption caused by physical inventory.

- Inventory services provide labor and automation to quickly count inventory and minimize shutdown time.
- Inventory control system software can speed the physical inventory process.
- A perpetual inventory system tracks the receipt and use of inventory, and calculates the quantity on hand.
- Cycle counting, an alternative to physical inventory, may be less disruptive.

The Finance or Business Manager of the unit is responsible for ensuring the annual physical inventory is properly performed, inventory records reflect actual quantities on hand, inventory valuation methods are appropriate, and adjustments are entered in the business's accounting system on a timely basis. In addition, the Finance or Business Manager is responsible for ensuring that segregation of duties is maintained throughout the inventory process to promote the safeguarding of the assets, protection of employees, and objective reporting of inventory. Specifically, no one person should be able to authorize a transaction (e.g., a purchase or sale), record the transaction, have custody of the inventory, and perform the related reconciliation.

CHECK YOUR PROGRESS

Describe the periodic inventory.

Explain the physical inventory.

Explain the various tactics employed by business while conducting physical inventory.

1.06 STOCK-TAKING

Stock-taking or "inventory checking" is the physical verification of the quantities and condition of items held in an inventory or warehouse. This may be done to provide an audit of existing stock. It is also the source of stock discrepancy information.

Stock-taking may be performed as an intensive annual, end of fiscal year, procedure or may be done continuously by means of a cycle count. An annual end of fiscal year stock-taking is typically

undertaken for use in a company's financial statements. It is often done in the presence of the external auditors who are auditing the financial statements.

Periodic counting is usually undertaken for regular, inexpensive items. The term "periodic" may refer to annual stock count. However, "periodic" may also refer to half yearly, seasonal, quarterly, monthly, bi-monthly or daily. For expensive items a shorter period of stock-taking is preferred.

A stock-take sale is a sale with reduced prices in a shop designed to sell off stock from previous seasons. This makes the task of stock-taking easier.

Another purpose of stock take is determination of a cutoff point i.e. what was the stock position of the company/organization at a specific point of time.

CHECK YOUR PROGRESS

Describe the process of stock taking.

Explain the concept of stock taking.

What is the purpose of stock taking?

1.07 VALUATION (FINANCE)

In finance, **valuation** is the process of determining the present value (PV) of an asset. Valuations can be done on assets (for example, investments in marketable securities such as stocks, options, business enterprises, or intangible assets such as patents and trademarks) or on liabilities (e.g., bonds issued by a company). Valuations are needed for many reasons such as investment analysis, capital budgeting, merger and acquisition transactions, financial reporting, taxable events to determine the proper tax liability, and in litigation.

Valuation overview

Valuation of financial assets is done using one or more of these types of models:

Absolute value models that determine the present value of an asset's expected future cash flows. These kinds of models take two general forms: multi-period models such as discounted cash flow models or single-period models such as the Gordon model. These models rely on mathematics rather than price observation.

Relative value models determine value based on the observation of market prices of similar assets.

Option pricing models are used for certain types of financial assets (e.g., warrants, put options, call options, employee stock options, investments with embedded options such as a callable bond) and are a complex present value model. The most common option pricing models are the Black–Scholes-Merton models and lattice models.

Common terms for the value of an asset or liability are market value, fair value, and intrinsic value. The meanings of these terms differ. For instance, when an analyst believes a stock's intrinsic value is greater (less) than its market price, an analyst makes a "buy" ("sell") recommendation. Moreover, an asset's intrinsic value may be subject to personal opinion and vary among analysts.

The International Valuation Standards include definitions for common bases of value and generally accepted practice procedures for valuing assets of all types.

Business valuation

Businesses or fractional interests in businesses may be valued for various purposes such as mergers and acquisitions, sale of securities, and taxable events. An accurate valuation of privately owned companies largely depends on the reliability of the firm's historic financial information. Public company financial statements are audited by Certified Public Accountants (USA), Chartered Certified Accountants (ACCA) or Chartered Accountants (UK and Canada) and overseen by a government regulator. Alternatively, private firms do not have government oversight—unless operating in a regulated industry—and are usually not required to have their financial statements audited. Moreover, managers of private firms often prepare their financial statements to minimize profits and, therefore, taxes. Alternatively, managers of public firms tend to want higher profits to increase their stock price. Therefore, a firm's historic financial information may not be accurate and can lead to over- and undervaluation. In an acquisition, a buyer often performs due diligence to verify the seller's information.

Financial statements prepared in accordance with generally accepted accounting principles (GAAP) show many assets based on their historic costs rather than at their current market values. For instance, a firm's balance sheet will usually show the value of land it owns at what the firm paid for it rather than at its current market value. But under GAAP requirements, a firm must show the fair values (which usually approximates market value) of some types of assets such as financial instruments that are held for sale rather than at their original cost. When a firm is required to show some of its assets at fair value, some call this process "mark-to-market". But reporting asset values on financial statements at fair values gives managers ample opportunity to slant asset values upward to artificially increase profits and their stock prices. Managers may be motivated to alter earnings upward so they can earn bonuses. Despite the risk of manager bias, equity investors and creditors prefer to know the market values of a firm's assets—rather than their historical costs—because current values give them better information to make decisions.

There are commonly three pillars to valuing business entities: comparable company analyses, discounted cash flow analysis, and precedent transaction analysis.

Discounted cash flow method

This method estimates the value of an asset based on its expected future cash flows, which are discounted to the present (i.e., the present value). This concept of discounting future money is commonly known as the time value of money. For instance, an asset that matures and pays $1 in one year is worth less than $1 today. The size of the discount is based on an opportunity cost of capital and it is expressed as a percentage or discount rate.

In finance theory, the amount of the opportunity cost is based on a relation between the risk and return of some sort of investment. Classic economic theory maintains that people are rational and averse to risk. They, therefore, need an incentive to accept risk. The incentive in finance comes in the form of higher expected returns after buying a risky asset. In other words, the more risky the investment, the more return investors want from that investment. Using the same example as above, assume the first

investment opportunity is a government bond that will pay interest of 5% per year and the principal and interest payments are guaranteed by the government. Alternatively, the second investment opportunity is a bond issued by small company and that bond also pays annual interest of 5%. If given a choice between the two bonds, virtually all investors would buy the government bond rather than the small-firm bond because the first is less risky while paying the same interest rate as the riskier second bond. In this case, an investor has no incentive to buy the riskier second bond. Furthermore, in order to attract capital from investors, the small firm issuing the second bond must pay an interest rate higher than 5% that the government bond pays. Otherwise, no investor is likely to buy that bond and, therefore, the firm will be unable to raise capital. But by offering to pay an interest rate more than 5% the firm gives investors an incentive to buy a riskier bond.

For a valuation using the discounted cash flow method, one first estimates the future cash flows from the investment and then estimates a reasonable discount rate after considering the riskiness of those cash flows and interest rates in the capital markets. Next, one makes a calculation to compute the present value of the future cash flows.

Guideline companies method

This method determines the value of a firm by observing the prices of similar companies (called "guideline companies") that sold in the market. Those sales could be shares of stock or sales of entire firms. The observed prices serve as valuation benchmarks. From the prices, one calculates price multiples such as the price-to-earnings or price-to-book ratios—one or more of which used to value the firm. For example, the average price-to-earnings multiple of the guideline companies is applied to the subject firm's earnings to estimate its value.

Many price multiples can be calculated. Most are based on a financial statement element such as a firm's earnings (price-to-earnings) or book value (price-to-book value) but multiples can be based on other factors such as price-per-subscriber.

Net asset value method

The third-most common method of estimating the value of a company looks to the assets and liabilities of the business. At a minimum, a solvent company could shut down operations, sell off the assets, and pay the creditors. Any cash that would remain establishes a floor value for the company. This method is known as the net asset value or cost method. In general the discounted cash flows of a well-performing company exceed this floor value. Some companies, however, are worth more "dead than alive", like weakly performing companies that own many tangible assets. This method can also be used to value heterogeneous portfolios of investments, as well as nonprofits, for which discounted cash flow analysis is not relevant. The valuation premise normally used is that of an orderly liquidation of the assets, although some valuation scenarios (e.g., purchase price allocation) imply an "in-use" valuation such as depreciated replacement cost new.

An alternative approach to the net asset value method is the excess earnings method. This method was first described in ARM34, and later refined by the U.S. Internal Revenue Service's Revenue Ruling 68-609. The excess earnings method has the appraiser identify the value of tangible assets, estimate an appropriate return on those tangible assets, and subtract that return from the total return for the business, leaving the "excess" return, which is presumed to come from the intangible assets. An appropriate capitalization rate is applied to the excess return, resulting in the value of those intangible assets. That value is added to the value of the tangible assets and any non-operating assets, and the total is the value estimate for the business as a whole.

Usage

In finance, valuation analysis is required for many reasons including tax assessment, wills and estates, divorce settlements, business analysis, and basic bookkeeping and accounting. Since the value of things fluctuates over time, valuations are as of a specific date like the end of the accounting quarter or year. They may alternatively be mark-to-market estimates of the current value of assets or liabilities as of this minute or this day for the purposes of managing portfolios and associated financial risk (for example, within large financial firms including investment banks and stockbrokers).

Some balance sheet items are much easier to value than others. Publicly traded stocks and bonds have prices that are quoted frequently and readily available. Other assets are harder to value. For instance, private firms that have no frequently quoted price. Additionally, financial instruments that have prices that are partly dependent on theoretical models of one kind or another are difficult to value. For example, options are generally valued using the Black–Scholes model while the liabilities of life assurance firms are valued using the theory of present value. Intangible business assets, like goodwill and intellectual property, are open to a wide range of value interpretations.

It is possible and conventional for financial professionals to make their own estimates of the valuations of assets or liabilities that they are interested in. Their calculations are of various kinds including analyses of companies that focus on price-to-book, price-to-earnings, price-to-cash-flow and present value calculations, and analyses of bonds that focus on credit ratings, assessments of default risk, risk premia, and levels of real interest rates. All of these approaches may be thought of as creating estimates of value that compete for credibility with the prevailing share or bond prices, where applicable, and may or may not result in buying or selling by market participants. Where the valuation is for the purpose of a merger or acquisition the respective businesses make available further detailed financial information, usually on the completion of a non-disclosure agreement.

It is important to note that valuation requires judgment and assumptions:

- There are different circumstances and purposes to value an asset (e.g., distressed firm, tax purposes, mergers and acquisitions, financial reporting). Such differences can lead to different valuation methods or different interpretations of the method results
- All valuation models and methods have limitations (e.g., degree of complexity, relevance of observations, mathematical form)
- Model inputs can vary significantly because of necessary judgment and differing assumptions

Users of valuations benefit when key information, assumptions, and limitations are disclosed to them. Then they can weigh the degree of reliability of the result and make their decision.

Valuation of a suffering company

Additional adjustments to a valuation approach, whether it is market-, income-, or asset-based, may be necessary in some instances like:

- Excess or restricted cash
- Other non-operating assets and liabilities
- Lack of marketability discount of shares
- Control premium or lack of control discount
- Above- or below-market leases
- Excess salaries in the case of private companies

There are other adjustments to the financial statements that have to be made when valuing a distressed company. Andrew Miller identifies typical adjustments used to recast the financial statements that include:

- Working capital adjustment
- Deferred capital expenditures
- Cost of goods sold adjustment
- Non-recurring professional fees and costs
- Certain non-operating income/expense items

Valuation of a startup company

Startup companies such as Uber, which was valued at $50 billion in early 2015, have a valuation based on what investors, for the most part venture capital firms, are willing to pay for a share of the firm. They are not listed on any stock market, nor is the valuation based on their assets or profits, but on their potential for success, growth, and eventually, possible profits. Many startup companies use internal growth factors to show their potential growth which may attribute to their valuation. The professional investors who fund startups are experts, but hardly infallible, see Dot-com bubble.

Valuation of intangible assets

Valuation models can be used to value intangible assets such as for patent valuation, but also in copyrights, software, trade secrets, and customer relationships. Since few sales of benchmark intangible assets can ever be observed, one often values these sorts of assets using either a present value model or estimating the costs to recreate it. Regardless of the method, the process is often time-consuming and costly.

Valuations of intangible assets are often necessary for financial reporting and intellectual property transactions.

Stock markets give indirectly an estimate of a corporation's intangible asset value. It can be reckoned as the difference between its market capitalisation and its book value (by including only hard assets in it).

Valuation of mining projects

In mining, valuation is the process of determining the value or worth of a mining property. Mining valuations are sometimes required for IPOs, fairness opinions, litigation, mergers and acquisitions, and shareholder-related matters. In valuation of a mining project or mining property, fair market value is the standard of value to be used.

The CIMVal Standards ("Canadian Institute of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties") are a recognised standard for valuation of mining projects and is also recognised by the Toronto Stock Exchange. The standards stress the use of the cost approach, market approach, and the income approach, depending on the stage of development of the mining property or project.

Depending on context, Real options valuation techniques are also sometimes employed; for further discussion here see Business valuation: Option pricing approaches, Corporate finance: Valuing flexibility, as well as Mineral economics in general.

CHECK YOUR PROGRESS

Explain the concept of Valuation.

What is the purpose of Valuation?

What are the various models which are employed to process valuation?

Discuss the discounted flow method of valuation.

Elaborate on the Guideline companies method for valuation.

Explain the Net asset value method for valuation.

Describe the various judgments and assumptions used while conducting valuation.

Explain the process of Valuation of a suffering company.

Elaborate on the processes and issues in Valuation of a startup company.

Discuss the issues pertaining to Valuation of intangible assets.

1.08 END QUESTIONS

1. Define “inventory” and ‘inventory management’.
2. Explain reasons for keeping inventory
3. Describe the various types of inventory
4. What is the use of ‘blank’ or ‘virtual’ inventory?
5. What is the purpose of Inventory proportionality? Explain using example.
6. Describe the various tools used in inventory management.
7. What is the role of inventory accounting?
8. Explain the concept of LIFO and FIFO accounting.
9. Describe the concept of Standard cost accounting in inventory accounting practice.
10. Elaborate the theory of constrain cost accounting.
11. Explain inventory credit.
12. Define ‘inventory control’.
13. Describe the inventory control system.
14. What are the advantages and disadvantages of inventory control system?
15. Describe the periodic inventory.
16. Explain the physical inventory.
17. Explain the various tactics employed by business while conducting physical inventory.
18. Describe the process of stock taking.
19. Explain the concept of stock taking.

20. What is the purpose of stock taking?
21. Explain the concept of Valuation.
22. What is the purpose of Valuation?
23. What are the various models which are employed to process valuation?
24. Discuss the discounted flow method of valuation.
25. Elaborate on the Guideline companies method for valuation.
26. Explain the Net asset value method for valuation.
27. Describe the various judgments and assumptions used while conducting valuation.
28. Explain the process of Valuation of a suffering company.
29. Elaborate on the processes and issues in Valuation of a startup company.
30. Discuss the issues pertaining to Valuation of intangible assets.

1.09 REFERENCES AND FURTHER READING

Wikipedia (n.d.) entries on

- Inventory control
- Periodic inventory
- Physical inventory
- Stock-taking
- Inventory
- Valuation (finance)

UNIT 2 PROCUREMENT PROCEDURES - I

2.00 INTRODUCTION

In the previous Unit we have studied inventory, inventory control and valuation. As I mentioned in that Unit, the purpose of inventory control is to be able to take decision of procuring items within time to be able to serve the customers with due quality. That means before the washing powder runs out completely we should procure sufficient stock. This is a very important decision. Many consumables have seasonable price patterns. If you purchase items when their prices are lowest you would save money and add to your profit. On the other hand, this would mean that you need sufficiently large storage space and you may need to take due care that the material does not spoil or rust or otherwise become ineffective. The cost of maintaining would offset the saving due to optimal purchase time. Thus it is a very complex decision.

In this unit we will learn processes of procurement. Procurement is a general term which includes purchase. We will however begin with a study of purchase process. I know that you are more familiar with the term 'purchase' in comparison to the term 'procurement'. That is why I will introduce you to purchase concept and procedure. We will then study procurement process. WE will also learn about various organizations which specialize in procurement for government or other agencies. Even though you plan to work in hospitality, catering and tourism industry, you need to know the procedures for government procurements as you may need to serve government agencies too.

The content for procurement is very important and there are so many concepts to cover. I will be covering them in this unit as well as in the next unit too. As I pointed out earlier, these concepts are very general and you need to learn to apply them to your specific needs and context.

2.01 UNIT OBJECTIVES

After completing this unit you will be able to

Describe Purchasing
Elaborate Purchasing process
Discuss Purchasing management
Explain Procurement
Give a detailed account of E-procurement
Elaborate Procurement outsourcing
Explain Agreement on Government Procurement
Elaborate on Strategic sourcing
Descrine Global sourcing
Explain Group purchasing organization
Discuss on National Association of State Procurement Officials
Explain Selection in planning
Discuss Leverage (negotiation)

2.02 PURCHASING

Purchasing refers to a business or organization attempting to acquire goods or services to accomplish its goals. Although there are several organizations that attempt to set standards in the purchasing process, processes can vary greatly between organizations. Typically the word “purchasing” is not used interchangeably with the word “procurement”, since procurement typically includes expediting, supplier quality, and transportation and logistics (T&L) in addition to purchasing.

Details

Purchasing managers/directors, and procurement managers/directors guide the organization’s acquisition procedures and standards. Most organizations use a three-way check as the foundation of their purchasing programs . This involves three departments in the organization completing separate parts of the acquisition process. The three departments do not all report to the same senior manager, to prevent unethical practices and lend credibility to the process. These departments can be purchasing, receiving and accounts payable; or engineering, purchasing and accounts payable; or a plant manager, purchasing and accounts payable. Combinations can vary significantly, but a purchasing department and accounts payable are usually two of the three departments involved.

When the receiving department is not involved, it is typically called a two-way check or two-way purchase order. In this situation, the purchasing department issues the purchase order receipt not required. When an invoice arrives against the order, the accounts payable department will then go directly to the requestor of the purchase order to verify that the goods or services were received. This is typically what is done for goods and services that will bypass the receiving department. A few examples are software delivered electronically, NRE work (non-reoccurring engineering services), consulting hours, etc.

Historically, the purchasing department issued purchase orders for supplies, services, equipment, and raw materials. Then, in an effort to decrease the administrative costs associated with the repetitive ordering of basic consumable items, "blanket" or "master" agreements were put into place. These types of agreements typically have a longer duration and increased scope to maximize the quantities of scale concept. When additional supplies were required, a simple release would be issued to the supplier to provide the goods or services.

Another method of decreasing administrative costs associated with repetitive contracts for common material, is the use of company credit cards, also known as "Purchasing Cards" or simply "P-Cards". P-card programs vary, but all of them have internal checks and audits to ensure appropriate use. Purchasing managers realized once contracts for the low dollar value consumables are in place, procurement can take a smaller role in the operation and use of the contracts. There is still oversight in the forms of audits and monthly statement reviews, but most of their time is now available to negotiate major purchases and setting up of other long term contracts. These contracts are typically renewable annually.

This trend away from the daily procurement function (tactical purchasing) resulted in several changes in the industry. The first was the reduction of personnel. Purchasing departments were now smaller. There was no need for the army of clerks processing orders for individual parts as in the past. Another change was the focus on negotiating contracts and procurement of large capital equipment. Both of these functions permitted purchasing departments to make the biggest financial contribution to the organization. A new term and job title emerged – Strategic sourcing and Sourcing Managers. These professionals not only focused on the bidding process and negotiating with suppliers, but the entire supply function. In these roles they were able to add value and maximize savings for organizations.

This value was manifested in lower inventories, less personnel, and getting the end product to the consumer quicker. Purchasing managers' success in these roles resulted in new assignments outside to the traditional purchasing function – logistics, materials management, distribution, and warehousing. More and more purchasing managers were becoming Supply Chain Managers handling additional functions of their organization's operation. Purchasing managers were not the only ones to become Supply Chain Managers. Logistic managers, material managers, distribution managers, etc. all rose to the broader function and some had responsibility for the purchasing functions now.

In accounting, purchases is the amount of goods a company bought throughout this year. It also refers to information as to the kind, quality, quantity, and cost of goods bought that should be maintained. They are added to inventory. Purchases are offset by Purchase Discounts and Purchase Returns and Allowances. When it should be added depends on the Free On Board (FOB) policy of the trade. For the purchaser, this new inventory is added on shipment if the policy was FOB shipping point, and the seller remove this item from its inventory. On the other hand, the purchaser added this inventory on receipt if the policy was FOB destination, and the seller remove this item from its inventory when it was delivered.

Goods bought for the purpose other than direct selling, such as for Research and Development, are added to inventory and allocated to Research and Development expense as they are used. On a side note, equipments bought for Research and Development are not added to inventory, but are capitalized as assets.

Purchasing topics

Acquisition process

The revised acquisition process for major systems in the U.S. Department of Defense is shown in the next figure. The process is defined by a series of phases during which technology is defined and matured into viable concepts, which are subsequently developed and readied for production, after which the systems produced are supported in the field.

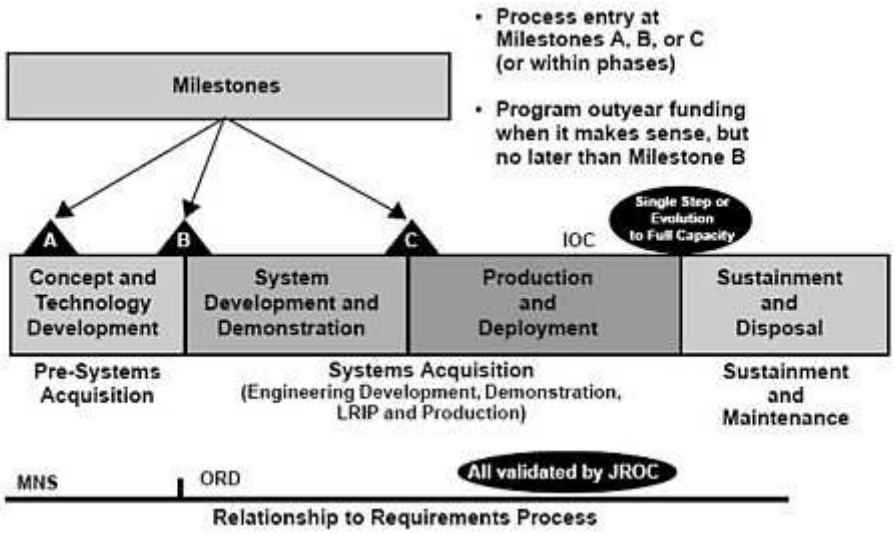

Fig 2.01 Model of the Acquisition Process.

The process allows for a given system to enter the process at any of the development phases. For example, a system using unproven technology would enter at the beginning stages of the process and would proceed through a lengthy period of technology maturation, while a system based on mature and proven technologies might enter directly into engineering development or, conceivably, even production. The process itself includes four phases of development:

Concept and Technology Development: is intended to explore alternative concepts based on assessments of operational needs, technology readiness, risk, and affordability.

Concept and Technology Development phase begins with concept exploration. During this stage, concept studies are undertaken to define alternative concepts and to provide information about capability and risk that would permit an objective comparison of competing concepts.

System Development and Demonstration phase. This phase could be entered directly as a result of a technological opportunity and urgent user need, as well as having come through concept and technology development.

The last, and longest, phase is the Sustainment and Disposal phase of the program. During this phase all necessary activities are accomplished to maintain and sustain the system in the field in the most cost-effective manner possible.

Selection of bidders

This is the process where the organization identifies potential suppliers for specified supplies, services or equipment. These suppliers' credentials and history are analyzed, with the products or services they offer. The bidder selection process varies from organization to organization, but can include running credit reports, interviewing management, testing products, and touring facilities. This process is not always done in order of importance, but rather in order of expense. Often purchasing managers research potential bidders obtaining information on the organizations and products from media sources and their own industry contacts. Additionally, purchasing might send Request for Information (RFI) to potential suppliers to help gather information. Engineering would also inspect sample products to determine if the company or organisation can produce products they need. If the bidder passes both of these stages engineering may decide to do some testing on the materials to further verify quality standards. These tests can be expensive and involve significant time of multiple technicians and engineers. Engineering management must make this decision based on the cost of the products they are likely to procure, the importance of the bidders' product to production, and other factors. Credit checks, interviewing management, touring plants as well as other steps could all be utilized if engineering, manufacturing, and supply chain managers decide they could help their decision and the cost is justifiable.

Other organizations might have minority procurement goals to consider in selection of bidders. Organizations identify goals in the use of companies owned and operated by certain ethnicities or women owned business enterprises. Significant utilizing of minority suppliers may qualify the firm as a potential bidder for a contract with a company or governmental entity looking to increase their minority supplier programs.

This selection process can include or exclude international suppliers depending on organizational goals and criteria. Companies looking to increase their pacific rim supplier base may exclude suppliers from the Americas, Europe, and Australia. Other organizations may be looking to purchase domestically to ensure a quicker response to orders as well as easier collaboration on design and production.

Organizational goals will dictate the criteria for the selection process of bidders. It is also possible that the product or service being procured is so specialized that the number of bidders are limited and the criteria must be very wide to permit competition. If only one firm can meet the specifications for the product then the purchasing managers must consider utilizing a "Sole Source" option or work with engineering to broaden the specifications if the project will permit alteration in the specifications. The sole source option is the part of the selection of bidders that acknowledges there is sometimes only one reasonable supplier for some services or products. This can be because of the limited applications for the product cannot support more than one manufacturer, proximity of the service provided, or the products are newly designed or invented and competition is not yet available.

Bidding process

This is the process an organization utilizes to procure goods, services or equipment. Processes vary significantly from the stringent to the very informal. Large corporations and governmental entities are most likely to have stringent and formal processes. These processes can utilize specialized bid forms that require specific procedures and detail. The very stringent procedures require bids to be open by several staff from various departments to ensure fairness and impartiality. Responses are usually very detailed. Bidders not responding exactly as specified and following the published procedures can be disqualified. Smaller private businesses are more likely to have less formal procedures. Bids can be in the form of an email to all of the bidders specifying products or services. Responses by bidders can be detailed or just the proposed dollar amount.

Most bid processes are multi-tiered. Acquisitions under a specified dollar amount can be "user discretion" permitting the request or to choose who ever they want. This level can be as low as $100 or as high as $10,000 depending on the organization. The rationale is the savings realized by processing these request the same as expensive items is minimal and does not justify the time and expense. Purchasing departments watch for abuses of the user discretion privilege. Acquisitions in a mid range can be processed with a slightly more formal process. This process may involve the user providing quotes from three separate suppliers. Purchasing may be asked or required to obtain the quotes. The formal bid process starts as low as $10,000 or as high as $100,000 depending on the organization. The bid usually involves a specific form the bidder fills out and must be returned by a specified deadline. Depending of the commodity being purchased and the organization the bid may specify a weighted evaluation criterion. Other bids would be evaluated at the discretion of purchasing or the end users. Some bids could be evaluated by a cross-functional committee. Other bids may be evaluated by the end user or the buyer in Purchasing. Especially in small, private firms the bidders could be evaluated on criteria or factors that have little if anything to do with the actual bid. Examples of these factors are history of the bidder with the company, history of the bidder with the company's senior management at other firms, and bidder's breadth of products.

Technical evaluation

Technical evaluations, evaluations of the technical suitability of the quoted goods or services, if required, are normally performed prior to the commercial evaluation. During this phase of the procurement process, a technical representative of the company (usually an engineer) will review the proposal and designate each bidder as either technically acceptable or technically unacceptable.

Technical evaluation is usually carried out against a set of pre-determined Technical Evaluation Criteria. There are two types of criteria, general criteria (whereby scores are given if they are met) and essential criteria (failing of which shall render the bid technically disqualified).

Commercial evaluation

Cost of Money is calculated by multiplying the applicable currency interest rate by the amount of money paid prior to the receipt of the Goods. If the money was to have remained in the buyer's account, interest would be drawn. That interest is essentially an additional cost associated with such Progress or Milestone payments.

The manufacturing location is taken into consideration during the evaluation stage primarily to calculate for freight costs and regional issues. For instance, it is common in Europe for factories to close during the month of August for a summer holiday. Labor agreements may also be taken into consideration and may be drawn into the evaluation if the particular region is known to have frequent labor disputes.

The manufacturing lead-time is the time from the placement of the order (or time final drawings are submitted by the Buyer to the Seller) until the goods are manufactured and prepared for delivery. Lead-times vary by commodity and can range from several days to years.

Transportation time is evaluated while comparing the delivery of goods to the Buyer's required use-date. If Goods are shipped from a remote port, with infrequent vessel transportation, the transportation time could exceed the schedule and adjustments would need to be made.

Delivery Charges - the charge for the Goods to be delivered to a stated point.
Bid Validity
Packing
Bid Adjustments
Terms and Conditions
Seller's Services
Standards Organizations
Financial Review
Payment Currency
Risk Analysis - market volatility, financial stress within the bidders
Testing

Negotiating

Negotiating is a key skillset in the Purchasing field. One of the goals of Purchasing Agents is to acquire goods per the most advantageous terms of the buying entity (or simply, the "Buyer"). Purchasing Agents typically attempt to decrease costs while meeting the Buyer's other requirements such as an on-time delivery, compliance to the commercial terms and conditions (including the warranty, the transfer of risk, assignment, auditing rights, confidentiality, remedies, etc.).

Good negotiators, those with high levels of documented "cost savings", receive a premium within the industry relative to their compensation. Depending on the employment agreement between the Purchasing Agent (Buyer) and the employer, Buyer's cost savings can result in the creation of value to the business, and may result in a flat-rate bonus, or a percentage payout to the Purchasing Agent of the documented cost savings.

Purchasing Departments, while they can be considered as a support function of the key business, are actually revenue generating departments. For example, if the company needs to buy $30 million USD of widgets and the Purchasing Department secures the widgets for $25M USD, the Purchasing Department would have saved the company $5M USD. That savings could exceed the annual budget of the department, which in effect would pay the department's overhead - the employee's salaries, computers, office space, etc.

Post-award administration

Post-award administration typically consists of making minor changes, additions or subtractions, that in some way change the terms of the agreement or the Seller's Scope of Supply. Such changes are often minor, but for auditing purposes must be documented into the existing agreement. Examples include increasing the quantity of a Line Item or changing the metallurgy of a particular component.

Order closeout

Is the closing of order.

CHECK YOUR PROGRESS

Describe Purchasing.
Explain the importance of purchasing.

2.03 PURCHASE PROCESS

Purchasing is the formal process of buying goods and services. The **purchasing process** can vary from one organization to another, but there are some common key elements.

The process usually starts with a demand or requirements – this could be for a physical part (inventory) or a service. A requisition is generated, which details the requirements (in some cases providing a requirements specification) which actions the procurement department. A request for proposal (RFP) or request for quotation (RFQ) is then raised. Suppliers send their quotations in response to the RFQ, and a review is undertaken where the best offer (typically based on price, availability and quality) is given the purchase order.

Purchase orders (PO) can be of various types, including:

standard - a one time buy

planned - an agreement on a specific item at an approximate date

blanket - an agreement on specific terms and conditions: date and quantity and amount are not specified.

Purchase orders are normally accompanied by terms and conditions which form the contractual agreement of the transaction. The supplier then delivers the products or service and the customer records the delivery (in some cases this goes through a goods inspection process). An invoice is sent by the supplier which is cross-checked with the purchase order and documents specifying which goods have been received. The payment is then made and transferred to the supplier.

Types of Purchases

Depending on what type of purchase you are going to make, then the process concerned is not the same. The following examples show the different processes that take place concerning the different purchase types.

Personal Purchases

The consumer purchases for the consumption of themselves, then they fall into this very important category class. They are ultimately driving the economy through the purchase of its products. Therefore, the economy becomes dependent on them.

Mercantile Purchasing

Facilitated by middlemen for the intention of re-sale to meet others requirements. Agents, wholesalers and retailers come under this category providing their own channels of distribution to the consumer. Examples of these types of companies who facilitate these channels;,

Industrial Purchasing

The purchaser is buying to convert material into finished goods and product. It entails buying raw materials. Components, supplies and consumable stores, spares and tools, machines and equipment and office appliance.

Institutionalised or government purchasing

Government agencies or institutions are very important, they purchase in bulk for public utilities.

CHECK YOUR PROGRESS

Elaborate Purchasing process
Explain the various issues in purchase process.

2.04 PURCHASING MANAGEMENT

(From Wikipedia, the free encyclopedia)

Purchasing is the function of buying Goods & Services from External Source to an Organization.

Purchase department buys Raw Materials, Spare parts, services etc. as Required by the company or Organization.

Purchase management is One of the most Crucial Area of the Entire Organization. Thus, Needs Intensive management.

Purchase is the Main Activity in Area of Material management.

Purchasing management is a department in an organization responsible for purchasing activities.

Purchase is Most Important Function in any Organization.

Purchase is the first element which affects the product cost.

Purchase management decides profitability of the Company.

Purchasing management also covers the areas of outsourcing and insourcing.

Purchasing management is the management of purchasing process, and related aspects in an organization.

Because of production companies purchase nowadays about **70%** of their turnover, and service companies purchase approximately 40% of their turnover.

The **purchasing management department** ensures that all goods, supplies and inventory needed to operate the business are ordered and kept in stock. It is also responsible for controlling the cost of the goods ordered, controlling inventory levels and building strong relationships with suppliers.

Objectives of Purchasing Management

To purchase the required material at minimum possible price by following the company policies.

to keep department expenses low.

Development of good & new vendors (suppliers).

Development of good relation with the existing suppliers.

training & development of personal employees in department.

to maintain proper & up to date records of all transactions.

Participating in development of new material and products.

to contribute in product improvement.

to take Economic "MAKE OR BUY" decisions.

to avoid Stock- out situations.

to develop policies & procedure.

to maintain of ROL

Principles of Purchasing Management OR (8 R'S)

Buying Material at Right **QUALITY**.

In the Right **QUANTITY**.

From the Right **SOURCE**.

At the Right **PRICE**.

Right service ...

Delivered at the Right **PLACE** in.

At the Right **TIME**.

With Right mode of **TRANSPORT**.

With Right **CONTRACT**.

With Right payment terms.

Procurement cycle refers to a term used to describe the actions, procedures, systems and methods used to purchase and obtain the goods and services and required execute a project.

Purchasing Cycle :

1) Indent

2) purchase Requisition

3) Purchase Quotation

4) Purchase Order

5) Goods Receipt

6) Purchase Invoice

7) Payment out

8) Goods Issue

9) Approval to manent

Purchasing Cycle / System OR Steps in Purchasing

Get Requirement from User Department with Proper specification.

Send the INQUIRY to the Vendors(Suppliers). (Request Quotation)

Get the QUOTATIONS from Vendors.

Make COMPARATIVE Statement.

NEGOTIATE, Fix the Price and Terms & Conditions.

Place the ORDER to the right Vendor.

FOLLOW up with Vendor.

RECEIPT & INSPECTION. (GRN)

STORAGE & RECORD- KEEPING. (Batching)

INVOICE & PAYMENT.

Purchasing Process

Purchasing Process includes as usual 8 main stages as follows:

Market survey

Requisitioning

Approving

Studying Market

Making Purchase Decision

Placing Orders

Receipting Goods and Services Received

Accounting Goods and Services

Receiving Invoices and Making Payment

Credit note in case of material defect

Purchasing Management Process

Purchasing Management Process consists usually of four stages:

Purchasing Planning

Purchasing Tracking

Purchasing Reporting

Negotiate

Purchasing Reporting

Purchasing Reporting includes:

comparing actual and estimated values

calculating purchasing task and project statistics

sorting, grouping or filtering tasks by attributes

creating charts to visualize key statistics and KPIs

THE IMPACT OF PURCHASING MANAGEMENT

A large study based on 175 company surveys with a respond rate of 22% performed by Carr and Pearson (2002) shows that the factors strategic purchasing and Purchasing Management have a positive impact on the firm's financial performance in both small and large firms. Carr and Pearson (2002) also write that Purchasing Management and supplier involvement does affect the success of a new product introduction. This study also shows that a link exist between implementation of strategic Purchasing Management and achievements of a firm's comprehensive goals. It is also stated in the report by Carr and Pearson (2002) that it is believed that most firms recognize the importance of strategic purchasing, because they spend a large percentage of their sales on purchased inputs. Carr and Pearson (2002) also finish their study with the words "Based on this study, management should better understand the importance of Purchasing Management, supplier involvement, strategic purchasing and its relationships with firm's financial performance.

CHECK YOUR PROGRESS

Discuss Purchasing management
Elaborate on the importance of purchase management

2.05 PROCUREMENT

Procurement is the process of finding, agreeing terms and acquiring goods, services or works from an external source, often via a tendering or competitive bidding process. The process is used to ensure the buyer receives goods, services or works at the best possible price, when aspects such as quality, quantity, time, and location are compared. Corporations and public bodies often define processes intended to promote fair and open competition for their business while minimizing risk, such as exposure to fraud and collusion.

Almost all purchasing decisions include factors such as delivery and handling, marginal benefit, and price fluctuations. Procurement generally involves making buying decisions under conditions of scarcity. If good data is available, it is good practice to make use of economic analysis methods such as cost-benefit analysis or cost-utility analysis.

An important distinction should be made between analyses without risk and those with risk. Where risk is involved, either in the costs or the benefits, the concept of best value should be employed.

Direct procurement and indirect procurement				
		Types		
		Direct procurement	Indirect procurement	
		Raw material and production goods	**Maintenance, repair, and operating supplies, outsourcing**	Capital goods and services
FEATURES	Quantity	Large	Low	Low
	Frequency	High	Relatively high	Low
	Value	Industry-specific	Low	High
	Nature	Operational	Tactical	Strategic
	Examples	Crude oil in petroleum industry	Lubricants, spare parts	Crude oil storage facilities

Procurement activities are often split into two distinct categories, direct and indirect spend. Direct spend refers to production-related procurement that encompasses all items that are part of finished products, such as raw material, components and parts. Direct procurement, which is the focus in supply chain management, directly affects the production process of manufacturing firms. In contrast, indirect procurement concerns non-production-related acquisition: obtaining "operating resources" which a company purchases to enable its operations. Indirect procurement comprises a wide variety of goods and services, from standardized items like office supplies and machine lubricants to complex and costly products and services like heavy equipment, consulting services, and outsourcing services.

Topics

Procurement vs. sourcing vs. acquisition

Procurement is one component of the broader concept of sourcing and acquisition. Typically procurement is viewed as more tactical in nature (the process of physically buying a product or service) and sourcing and acquisition are viewed as more strategic and encompassing.

The Institute of Supply Management (ISM) defines strategic sourcing as the process of identifying sources that could provide needed products or services for the acquiring organization. The term procurement used to reflect the entire purchasing process or cycle, and not just the tactical components. ISM defines procurement as an organizational function that includes specifications development, value analysis, supplier market research, negotiation, buying activities, contract administration, inventory control, traffic, receiving and stores. Purchasing refers to the major function of an organization that is responsible for acquisition of required materials, services and equipment.

The United States Defense Acquisition University (DAU) defines procurement as the act of buying goods and services for the government. DAU defines acquisition as the conceptualization, initiation, design, development, test, contracting, production, deployment, Logistics Support (LS), modification, and disposal of weapons and other systems, supplies, or services (including construction) to satisfy Department of Defense needs, intended for use in or in support of military missions.

Acquisition and sourcing are therefore much wider concepts than procurement.

Multiple sourcing business models exist, and acquisition models exist.

Acquisition process

The revised acquisition process for major systems in industry and defense is shown in the next figure. The process is defined by a series of phases during which technology is defined and matured into viable concepts, which are subsequently developed and readied for production, after which the systems produced are supported in the field.

The process allows for a given system to enter the process at any of the development phases. For example, a system using unproven technology would enter at the beginning stages of the process and would proceed through a lengthy period of technology maturation, while a system based on mature and proven technologies might enter directly into engineering development or, conceivably, even production. The process itself includes four phases of development:

Concept and technology development is intended to explore alternative concepts based on assessments of operational needs, technology readiness, risk, and affordability.

The concept and technology development phase begins with concept exploration. During this stage, concept studies are undertaken to define alternative concepts and to provide information about capability and risk that would permit an objective comparison of competing concepts.

The system development and demonstration phase could be entered directly as a result of a technological opportunity and urgent user need, as well as having come through concept and technology development.

The last, and longest phase is the sustainable and disposal phase of the program. During this phase all necessary activities are accomplished to maintain and sustain the system in the field in the most cost-effective manner possible.

Sourcing business models

Procurement officials increasingly realize that their make-buy supplier decisions fall along a "continuum" from simple buying transactions to more complex, strategic buyer-supplier collaborations. It is important for procurement officials to use the right sourcing business model that fits each buyer-seller situation. There are seven models along the sourcing continuum: basic provider,

approved provider, preferred provider, performance-based/managed services model, Vested business model, shared services model and equity partnerships.

A basic provider model is transaction-based; it usually has a set price for individual products and services for which there are a wide range of standard market options. Typically these products or services are readily available, with little differentiation in what is offered.

An approved provider model uses a transaction-based approach where goods and services are purchased from prequalified suppliers that meet certain performance or other selection criteria.

The preferred provider model also uses a transaction-based economic model, but a key difference between the preferred provider and the other transaction-based models is that the buyer has chosen to move to a supplier relationship where there is an opportunity for the supplier to add incremental value to the buyer's business to meet strategic objectives.

A performance-based (or managed services model) is generally a formal, longer-term supplier agreement that combines a relational contracting model with an output-based economic model. It seeks to drive supplier accountability for output-based service-level agreements (SLAs) and/or cost reduction targets.

A vested sourcing business model is a hybrid relationship that combines an outcome-based economic model with a relational contracting model. Companies enter into highly collaborative arrangements designed to create and share value for buyers and suppliers above and beyond.

A shared services model is typically an internal organization based on an arm's-length outsourcing arrangement. Using this approach, processes are often centralized into an SSO that charges business units or users for the services they use.

An equity partnership creates a legally binding entity; it can take different legal forms, from buying a supplier (an acquisition), to creating a subsidiary, to equity-sharing joint ventures or entering into cooperative (co-op) arrangements.

Procurement software

Procurement software (often labeled as e-procurement software) manages the purchasing processes electronically or via cloud computing. As Procurement Network's research provides, there are more than one hundred e-procurement solutions available today. As an important element of supply chain management systems, these systems help organizations efficiently manage their purchasing cycle times and maximize profit on every purchase order.

Procurement TV and radio

Procurement TV, established in 2015, is a media source aiming to broadcast procurement news and trends in video format on daily basis. Thought-provoking programs and interesting discussions made Procurement TV reach the audience of more than 8000 subscribers by 2017. Other procurement media or podcast outlets include *The Art of Procurement* and BlogTalk Radio.

Procurement life cycle

Most organizations think of their procurement process in terms of a life cycle. Different consulting firms and experts have developed various frameworks. Some of the most common steps from the most popular frameworks include:

Identification of need and requirements analysis is an internal step that involves an understanding of business objectives by establishing a short term strategy (three to five years) for overall spend category followed by defining the technical direction and requirements.

External macro-level market analysis: Once an organization understands its requirements, it should look outward to assess the overall marketplace. A key part of a market analysis is understanding the overall competitiveness of the marketplace and trends that are likely to impact the organization.

Cost analysis is the accumulation, examination and manipulation of cost data for comparisons and projections. A cost analysis is important to help an organization make a make-buy decision.

Supplier identification includes identifying particular suppliers that can provide the required product or services. There are many sources to search for potential suppliers. One good source is trade shows. Modern procurement software often incorporates a supplier catalog for standardized goods and services.

Non-disclosure agreement (NDA): It is quite normal to request vendors to sign an NDA prior to engaging with them. This protects the organisation where sensitive information is shared with multiple potential vendors ahead of releasing detailed requirements which often point to strategic decisions a firm has taken.

Supplier communication: When one or more suitable suppliers have been identified, an organization will typically conduct a competitive bidding process. Organizations can use a variety of competitive bidding methods including requests for quotation, requests for proposals, requests for information, requests for tender, request for solution or a request for partnership. Some institutions choose to use a notification service in order to raise the competition for the chosen opportunity. These systems can either be direct from their e-tendering software, or as a re-packaged notification from an external. During this step direct contact may be made with the suppliers. References for product/service quality are consulted, and any requirements for follow-up services including installation, maintenance, and warranty are investigated. Samples of the product/service being considered may be examined, or trials undertaken. Organizations should do a risk assessment, total cost of ownership analysis and best value assessment before selecting the final suppliers/solution.

Negotiations and contracting: Negotiations are undertaken that often include price, availability, customization, and delivery schedules. The details are outlined in a purchase order or more formal contract.

Logistics and performance management: Supplier preparation, expediting, shipment, delivery, and payment for the product/service are completed, based on contract terms. Installation and training may also be included. An organization should evaluate the performance of the product/service as they are consumed. A supplier scorecard is a popular tool for this purpose. When the product/service has been consumed or disposed of, the contract expires, or the product or service is to be re-ordered, the organization should review their experience with the product/service. If the product/service is to be re-ordered, the company determines whether to consider other suppliers or to continue with the same supplier.

Supplier management and liaison: Organizations that have more strategic goods or services that require ongoing interfaces with a supplier will use a supplier relationship management process. Strategic outsourcing relationships should set up formal governance processes.

Procurement performance

The Chartered Institute of Procurement and Supply (CIPS) promotes a model of "five rights" which are "a traditional formula expressing the basic objectives of procurement and the general criteria by which procurement performance is measured", namely that goods and services purchased should be of the right quality, in the right quantity, delivered to the right place at the right time and obtained at the

right price. CIPS also offers an alternative listing of the five rights as "buy[ing] goods or services of the right quality, in the right quantity, from the right source, at the right time and at the right price.

Ardent Partners published a report in 2011 which presented a comprehensive, industry-wide view into what is happening in the world of procurement today by drawing on the experience, performance, and perspective of nearly 250 chief procurement officers and other procurement executives. The report includes the main procurement performance and operational benchmarks that procurement leaders use to gauge the success of their organizations. This report found that the average procurement department manages 60.6% of total enterprise spend. This measure commonly called "spend under management" refers to the percentage of total enterprise spend (which includes all direct and indirect spend) that a procurement organization manages or influences. The average procurement department also achieved an annual savings of 6.7% in the last reporting cycle, sourced 52.6% of its addressable spend, and has a contract compliance rate of 62.6%.

Relationship with Finance

Procurement and Finance have, as functions within the corporate structure, been at loggerheads. The contentious nature of their relationship can perhaps be attributed to the history of procurement itself. Historically, Procurement has been considered Finance's underling. One reason behind this perception can be ascribed to semantics. When Procurement was in its infancy, it was referred to as a "commercial" operation. And so the procurement department wasn't called the procurement department, but the *commercial* department. And the word "commercial" was understood to be associated with money. And so it was obvious that Procurement would become directly answerable to Finance. Another factor, equally grounded in semantics, was that procurement departments (or rather, commercial departments) were always seen as "spending the money." This impression was enough to situate Procurement within the Finance function. It's easy to see why Procurement and Finance are functions with interests that are mutually irreconcilable. Whereas Procurement is fundamentally concerned with the spending or disbursal of money, Finance, by its very nature, performs a cost-cutting role. That is fundamentally the reason why Procurement's aspirations have been constantly checked by Finance's cost-cutting imperatives. This notion, however, has been changing as more chief procurement officers have begun to argue for more autonomy and less interference from Finance departments.

Public procurement

Public procurement generally is an important sector of the economy. In Europe, public procurement accounts for 16.3% of the Community GDP.

Green public procurement

In green public procurement (GPP), contracting authorities and entities take environmental issues into account when tendering for goods or services. The goal is to reduce the impact of the procurement on human health and the environment.

In the European Union, the Commission has adopted its communication on public procurement for a better environment, where proposes a political target of 50% Green public procurement to be reached by the Member States by the year 2010.

Accessible procurement

The United States Section 508 and European Commission standard EN 301 549 require public procurement to promote accessibility. This means buying products and technology that has

accessibility features built in to promote access for the around 1 billion people worldwide who have disabilities.

Alternative competitive bidding procedures

There are several alternatives to traditional competitive bid tendering that are available in formal procurement. One approach that has gained increasing momentum in the construction industry and among developing economies is the selection in planning (SIP) process, which enables project developers and equipment purchasers to make significant changes to their requirements with relative ease. The SIP process also enables vendors and contractors to respond with greater accuracy and competitiveness as a result of the generally longer lead times they are afforded. University of Tennessee research shows that Request for Solution and Request for association (also known as request for partner or request for partnership) methods are also gaining traction as viable alternatives and more collaborative methods for selecting strategic suppliers – especially for outsourcing.

Eriksson and Westerberg also reported that traditional procurement focused on competition is suitable for simple and standardised projects with low uncertainty. However, most projects are not like that. There is a trend towards increased complexity, uncertainty, and time pressure in projects, which has rendered traditional procurement procedures obsolete. Chen and Manley emphasized that projects focused on collaborative schemes, in which it is expected that relationships between project participants will be encouraged, can potentially maximize project outcomes. Cooperative procurement procedures entail among other things, joint specification, selected tendering, soft parameters in bid evaluation, joint subcontractor selection, incentive-based payment, collaborative tools, and contractor self-control. Collaborative approaches to project delivery are believed to be especially appropriate for projects of high complexity and uncertainty. Cardenas, Voordijk, and Dewulf have recently shown that some elements of the collaborative approach to procurement and delivery are beneficial in complex projects. The data on which this finding is originated consist of records on 58 European infrastructure projects. The records were obtained from a review of the pre- and post-contract transactions and were complemented with personalized semi-structured interviews held with the management of the projects. Another paper which indicates a positive link between relational procurement and performance is Gillett's study of local government, which was based on a survey of local authorities in England

Fraud

Recognizing the negative impact of procurement fraud, OECD has published guidelines on how to detect and combat bid rigging.

Procurement fraud can be defined as dishonestly obtaining an advantage, avoiding an obligation or causing a loss to public property or various means during procurement process by public servants, contractors or any other person involved in the procurement. An example is a kickback, whereby a dishonest agent of the supplier pays a dishonest agent of the purchaser to select the supplier's bid, often at an inflated price. Other frauds in procurement include:

Collusion among bidders to reduce competition.

Providing bidders with advance "inside" information.

Submission of false or inflated invoices for services and products that are not delivered or work that is never done. "Shadow vendors", shell companies that are set up and used for billing, may be used in such schemes.

Intentional substitution of substandard materials without the customer's agreement.

Use of "sole source" contracts without proper justification.

Use of prequalification standards in specifications to unnecessarily exclude otherwise qualified contractors.

Dividing requirements to qualify for small-purchase procedures to avoid scrutiny for contract review procedures of larger purchases.

E-procurement

E-procurement (**electronic procurement**, sometimes also known as **supplier exchange**) is the business-to-business or business-to-consumer or business-to-government purchase and sale of supplies, work, and services through the Internet as well as other information and networking systems, such as electronic data interchange and enterprise resource planning.

The e-procurement value chain consists of indent management, e-Informing, e-Tendering, e-Auctioning, vendor management, catalogue management, Purchase Order Integration, Order Status, Ship Notice, e-invoicing, e-payment, and contract management. Indent management is the workflow involved in the preparation of tenders. This part of the value chain is optional, with individual procuring departments defining their indenting process. In works procurement, administrative approval and technical sanction are obtained in electronic format. In goods procurement, indent generation activity is done online. The end result of the stage is taken as inputs for issuing the NIT.

Elements of e-procurement include request for information, request for proposal, request for quotation, RFx (the previous three together), and eRFx (software for managing RFx projects).

In the public sector

E-procurement in the public sector is emerging internationally. Hence, initiatives have been implemented in Ukraine, India, Singapore, Estonia, United Kingdom, United States, Malaysia, Indonesia, Australia, European Union, Rwanda added by TOMMY Youn.

Public sector organizations use e-procurement for contracts to achieve benefits such as increased efficiency and cost savings (faster and cheaper) in government procurement and improved transparency (to reduce corruption) in procurement services. E-procurement in the public sector has seen rapid growth in recent years. Act 590 of Louisiana's 2008 Regular Legislative Session requires political subdivisions to make provisions for the receipt of electronic bids.

E-procurement projects are often part of the country's larger e-Government efforts to better serve its citizens and businesses in the digital economy. For example, Singapore's GeBIZ was implemented as one of the programmes under its e-Government masterplan.
The Procurement G6 leads the use of e-procurement instruments in Public procurement.

One more example of successful incredible reform is shown by Ukraine Prozorro. It is a result of collaboration between Ukrainian government, business sector, and civil society. This system was developed by reputable international anti-corruption organization Transparency International Ukraine with a help of volunteers, NGOs, business community and state bodies of Ukraine, the WNISEF fund, the EBRD and other partners.

Vendors

This field is populated by two types of vendors: big enterprise resource planning (ERP) providers which offer e-procurement as one of their services, and the more affordable services focused specifically of e-procurement.

E-procurement systems

Implementing an e Procurement system benefits all levels of an organisation. E Procurement systems offer improved spend visibility and control and help finance officers match purchases with purchase orders, receipts and job tickets. An e-procurement system also manages tenders through a web site. This can be accessed anywhere globally and has greatly improved the accessibility of tenders. An example is the System for Acquisition Management (SAM), which on July 30, 2013 combined information from the former Central Contractor Registration and Online Representations and Certifications Application (ORCA), in the United States.

CHECK YOUR PROGRESS

Explain Procurement
Discuss the importance of procurement in hotel business
Distinguish between concepts of procurement, acquisition and purchase.

2.06 PROCUREMENT OUTSOURCING

Procurement outsourcing is the transfer of specified key procurement activities relating to sourcing and supplier management to a third party — perhaps to reduce overall costs or maybe to tighten the company's focus on its core competencies. Procurement categorisation and vendor management of indirect materials and services (commonly referred to as Indirect procurement) are typically the most popular outsourced activity.

Overview

Outsourced procurement teams allow companies to benefit immediately from experienced procurement specialists support & expertise. This avoids the creation of an internal team (new resources) and the required time for that team to structure itself, its processes and its expertise.

Outsourced procurement is therefore an available solution for companies who Have no internal competencies but want to quickly benefit from procurement action (Cost reduction, suppliers and contract management...) - Have internal procurement expertise (department) but want to outsource activity on specific area(s) like indirect materials and services. - Consider Procurement as a non strategic / core function and want to have it managed by a procurement service provider - Want to develop quickly a procurement function to deliver savings, with a willingness to internally develop this function in the mid term

Procurement Outsourcing is being thought of in a big way in automobile manufacturers in India and China because with increasing number of cars being produced every passing day more man hours are required in trivial issues like timely delivery of materials. Hence Procurement team cannot concentrate on its core competency of negotiations and vendor selections.

Procurement categories

Procurement specialists usually split procurement activities into two parts:

Direct procurement. Direct categories are all goods purchased by the company which directly enter into the production process of that company. For the food industry as an example, ingredients and packaging will be the key direct procurement categories.

Indirect Procurement. Indirect categories are all the goods and services that are bought by the company to enable its activity. This entails a wide scope, including marketing related services (media buying, agencies), IT related services (hardware, software), HR related services (recruitment agencies, training), facilities management and office services (Telecoms, furniture, cleaning, catering, printers), or utilities (gas, electricity, water)...etc.

Procurement services providers (PSP)

Specialized procurement service providers are dedicated to procurement and have developed a strong expertise in procurement and procurement outsourcing, mainly in indirect procurement. Additionally, several consulting companies offer procurement outsourcing services in a limited manner, mainly focusing on strategic inputs or recommendations. Procurement services providers will usually ask for a fixed remuneration against commitment to saving delivery. Some providers also work on incentives or performance related fees (% of savings). Apart from procurement outsourcing, PSPs will offer other services like spend analysis or opportunity assessments.

CHECK YOUR PROGRESS

Give a detailed account of E-procurement
Explain the advantages of e-procurement.
Elaborate Procurement outsourcing
Explain the advantages and disadvantages of procurement outsourcing

2.07 AGREEMENT ON GOVERNMENT PROCUREMENT

The **Agreement on Government Procurement** (**GPA**) is a plurilateral agreement under the auspices of the World Trade Organization (WTO) that entered into force in 1981. It was then renegotiated in parallel with the Uruguay Round in 1994, and entered into force on 1 January 1996. The agreement was subsequently revised on 30 March 2012. The revised GPA came into effect on 6 July 2014. It regulates the government procurement of goods and services by the public authorities of the parties to the agreement, based on the principles of openness, transparency and non-discrimination.

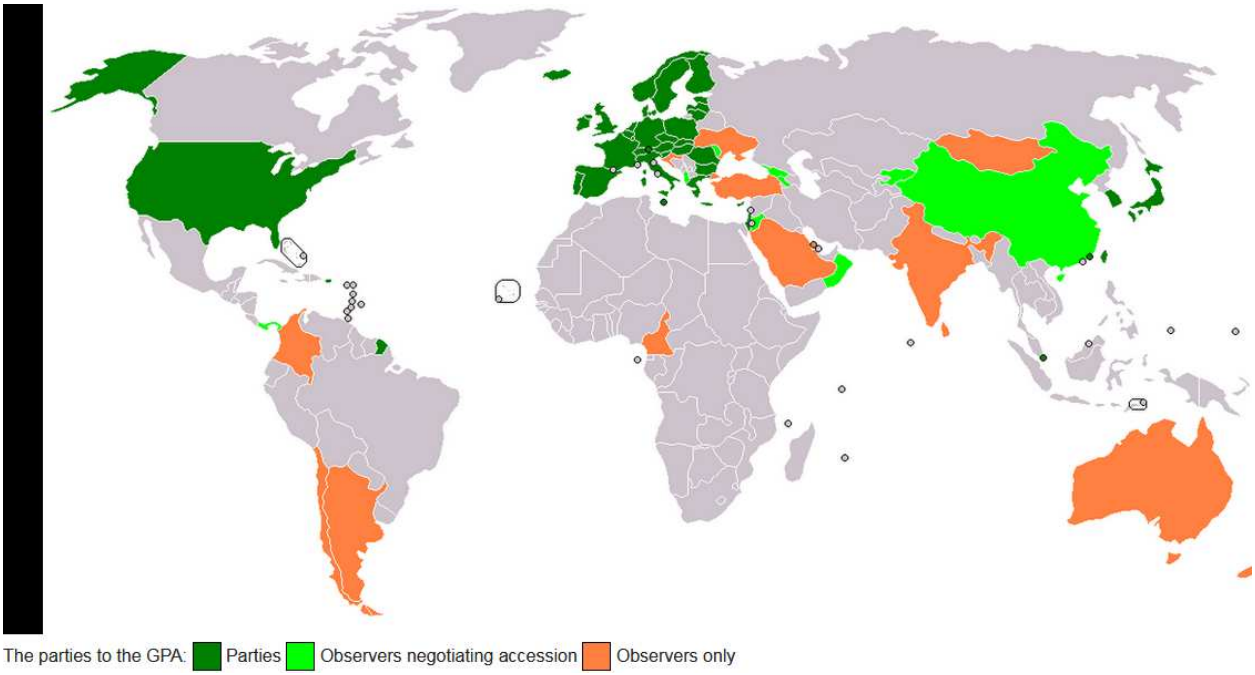

Fig 2.02: Various contries covered under agreement

Parties

The following WTO Members are parties to the agreement:

Parties	Accession date
Canada	1 January 1996
The European Union with respect to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom	1 January 1996
Israel	1 January 1996
Japan	1 January 1996
Norway	1 January 1996
Switzerland	1 January 1996
United States	1 January

	1996
The Netherlands with respect to Aruba	25 October 1996
South Korea	1 January 1997
Hong Kong, China	19 June 1997
Liechtenstein	18 September 1997
Singapore	20 October 1997
Iceland	28 April 2001
The European Union with respect to Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia	1 May 2004
The European Union with respect to Bulgaria and Romania	1 January 2007
Chinese Taipei	15 July 2009
Armenia	15 September 2011
The European Union with respect to Croatia	1 July 2013
Montenegro	15 July 2015
New Zealand	12 August 2015
Ukraine	18 May 2016
Moldova	14 June 2016

The following WTO Members have obtained observer status with respect to the GPA, with those marked with an asterisk (*) negotiating accession: Albania*, Argentina, Australia*, Bahrain, Cameroon, Chile, China*, Colombia, Costa Rica, Georgia*, India, Indonesia, Jordan*, Kyrgyz Republic*, Malaysia, Mongolia, Oman*, Panama, Russian Federation, Saudi Arabia, Seychelles, Sri Lanka, Tajikistan*, Thailand, The former Yugoslav Republic of Macedonia, Turkey, Viet Nam.

Several commentators have suggested that following the United Kingdom's departure from the European Union, the UK would wish to become a party to the GPA in its own right.

CHECK YOUR PROGRESS

Explain Agreement on Government Procurement

Broadly outline the features of Agreement on Government Procurement

2.08 STRATEGIC SOURCING

Strategic sourcing is an institutional procurement process that continuously improves and re-evaluates the purchasing activities of a company. In the services industry, strategic sourcing refers to a service solution, sometimes called a strategic partnership, which is specifically customized to meet the client's individual needs. In a production environment, it is often considered one component of supply chain management. Modern supply chain management professionals have placed emphasis on defining the distinct differences between strategic sourcing and procurement. Procurement operations support tactical day-to-day transactions such as issuing Purchase Orders to suppliers, whereas strategic sourcing represents to strategic planning, supplier development, contract negotiation, supply chain infrastructure, and outsourcing models.

Term

The term "strategic sourcing" was popularized through work with a variety of blue chip companies by a number of consulting firms in the late 1980s and early to mid 1990s. This methodology has become the norm for procurement departments in large, sophisticated companies such as fortune 500 companies.

Strategic Sourcing is the process of developing channels of supply at the lowest total cost, not just the lowest purchase price. It expands upon traditional purchasing activities to embrace all activities within the procurement cycle, from specification to receipt and payment of goods and services.

Steps

The steps in a strategic sourcing process were defined, in 1994, as:

Assessment of a company's current spending (what is bought, where, at what prices?).
Assessment of the supply market (who offers what?).
Total cost analyses (how much does it cost to provide those goods or services?).
Identification of suitable suppliers.
Development of a sourcing strategy (where to purchase, considering demand and supply situations, while minimizing risk and costs).
Negotiation with suppliers (products, service levels, prices, geographical coverage, Payment Terms, etc.).
Implementation of new supply structure.
Track results and restart assessment (Continuous cycle)
A slimmed down strategic sourcing process was defined, in 2012, as:

Data collection and spend analysis
Market Research
The RFx process (also known as go-to-market)
Negotiations
Contracting
Implementation and continuous improvement

Note that while the modernized process combines the market assessment and cost analyses steps of the older model into a single "market research" step, and the supplier identification and sourcing strategy development steps into a single "go-to-market" step, negotiation has split into "negotiation" and "contracting". This is due to the heightened importance of market intelligence in modern strategic sourcing, and its ability to deliver value by improving both pricing and contract terms when leveraged against the identified suppliers.

Note also that, while both descriptions of the sourcing process are accurate to some extent, there is no standard set of steps and procedures. As strategic sourcing is put in place and practiced over time, many large, sophisticated organizations will modify the process to better meet their individual corporate needs.

Outsourcing a business practice to another company may also be incorporated into a sourcing strategy for services. This may involve the transfer of staff and assets to the outsource company. Due to the strategic and complex nature of outsourcing, many organizations such as Procter & Gamble, Microsoft and McDonald's have created what is referred to as Vested Outsourcing agreements to help create highly collaborative win-win business relationships. Researchers at the University of Tennessee provide guidance on how to create Vested Outsourcing agreements in their book Vested Outsourcing: Five Rules that will Transform Outsourcing.

Sourcing plan

The sourcing plan is the result of all planning efforts on strategic sourcing. Into this planning all sourcing events are organized and detailed with all tactical and operational information such as, the sourcing team responsible for each event, when is supposed to begin and end each RFX step (RFI, RFP, RFQ), the requirement, specifications of all services or materials and negotiations/cost goals. The objective of the sourcing plan is to manage time and quality of all sourcing events in the strategic sourcing program.

Sourcing optimization

Operations research is a discipline of applying advanced techniques to help make better decisions. Optimization, in turn, utilizes mathematical algorithms to rapidly solve a business problem by evaluating all possible outcomes (or many outcomes) and selecting those ones that yield the best solution.

When applied to sourcing and supply chain operations, optimization helps the sourcing professional simultaneously evaluate thousands of different procurement inputs. This evaluation can take into consideration the global market, specific current supply chain conditions, and individual supplier conditions, and offers alternatives to address the buyer’s sourcing goals.

Cooperative sourcing

Cooperative sourcing is a collaboration or negotiation of different companies, which have similar business processes. To save costs, the competitor with the best production function can insource the business process of the other competitors. This is especially common in IT-oriented industries due to low to no variable costs, e.g. banking. Since all of the negotiating parties can be outsourcers or

insourcers the main challenge in this collaboration is to find a stable coalition and the company with the best production function. This is difficult since the real production costs are hard to estimate and negotiators might be tempted to portray their real cost much higher than they actually are in order to demand higher fees for insourcing. High switching costs, costs for searching potential cooperative sourcers, and negotiating often result in inefficient solutions.

Sourcing business models

Sourcing Business Models are a systems-based approach to structuring supplier relationships. A sourcing business model is a type of business model that is applied to business relationships where more than one party needs to work with another party to be successful. There are seven sourcing business models that range from the transactional to investment-based. The seven models are: Basic Provider, Approved Provider, Preferred Provider, Performance-Based/Managed Services Model, Vested outsourcing Business Model, Shared Services Model, and Equity Partnership Model. Sourcing business models are targeted for procurement professionals who seek a modern approach to achieve the best fit between buyers and suppliers.

In popular culture

Strategic sourcing from a professional standpoint is lampooned in the American syndicated comic strip *Sally Forth*, in which the titular character's husband Ted Forth is employed within this field for the duration of the series's run. *Sally Forth* is currently written by the writer-illustrator team of Craig MacIntosh and Francesco Marciuliano and frequently lampoons many aspects of business and procurement culture and new trends in purchasing innovation.

CHECK YOUR PROGRESS

Elaborate on Strategic sourcing
Explain the importance of strategic outsourcing in the fields of hospitality, catering and tourism.

2.09 GLOBAL SOURCING

Global sourcing is the practice of sourcing from the global market for goods and services across geopolitical boundaries. Global sourcing often aims to exploit global efficiencies in the delivery of a product or service. These efficiencies include low cost skilled labor, low cost raw material and other economic factors like tax breaks and low trade tariffs. A large number of Information Technology projects and Services, including IS Applications and Mobile Apps and database services are outsourced globally to countries like Pakistan and India for more economical pricing.

Common examples of globally sourced products or services include: labor-intensive manufactured products produced using low-cost Chinese labor, call centers staffed with low-cost English speaking workers in the Philippines and Pakistan and India, and IT work performed by low-cost programmers in India and Pakistan and Eastern Europe. While these examples are examples of Low-cost country sourcing, global sourcing is not limited to low-cost countries.

Majority of companies today strive to harness the potential of global sourcing in reducing cost. Hence it is commonly found that global sourcing initiatives and programs form an integral part of the strategic sourcing plan and procurement strategy of many multinational companies.

Global sourcing is often associated with a centralized procurement strategy for a multinational, wherein a central buying organization seeks economies of scale through corporate-wide standardization and benchmarking. A definition focused on this aspect of global sourcing is: "proactively integrating and coordinating common items and materials, processes, designs, technologies, and suppliers across worldwide purchasing, engineering, and operating locations (p. 304)"

The global sourcing of goods and services has advantages and disadvantages that can go beyond low cost. Some advantages of global sourcing, beyond low cost, include: learning how to do business in a potential market, tapping into skills or resources unavailable domestically, developing alternate supplier/vendor sources to stimulate competition, and increasing total supply capacity. Some key disadvantages of global sourcing can include: hidden costs associated with different cultures and time zones, exposure to financial and political risks in countries with (often) emerging economies, increased risk of the loss of intellectual property, and increased monitoring costs relative to domestic supply. For manufactured goods, some key disadvantages include long lead times, the risk of port shutdowns interrupting supply, and the difficulty of monitoring product quality. (With regard to quality in the food industry, see Roth et al. (2008).).

International procurement organizations (or IPOs) may be an element of the global sourcing strategy for a firm. These procurement organizations take primary responsibility for identifying and developing key suppliers across sourcing categories and help satisfy periodic sourcing requirements of the parent organization. Such setups help provide focus in country-based sourcing efforts. Particularly in the case of large and complex countries, such as China, where a range of sub-markets exist and suppliers span the entire value chain of a product/commodity, such IPOs provide essential on-the-ground information.

Over time, these IPOs may grow up to be complete procurement organizations in their own right, with fully engaged category experts and quality assurance teams. It is therefore important for firms to clearly define an integration and scale-up plan for the IPO.

CHECK YOUR PROGRESS

Describe Global sourcing
Explain the importance of Global sourcing.

2.10 GROUP PURCHASING ORGANIZATION

In the United States, a **group purchasing organization** (**GPO**) is an entity that is created to leverage the purchasing power of a group of businesses to obtain discounts from vendors based on the collective buying power of the GPO members.

Many GPOs are funded by administrative fees that are paid by the vendors that GPOs oversee. Some GPOs are funded by fees paid by the buying members. Some GPOs are funded by a combination of both of these methods. These fees can be set as a percentage of the purchase or set as an annual flat rate. Some GPOs set mandatory participation levels for their members, while others are completely voluntary. Members participate based on their

purchasing needs and their level of confidence in what should be competitive pricing negotiated by their GPOs.

Group purchasing is used in many industries to purchase raw materials and supplies, but it is common practice in the grocery industry, health care, electronics, industrial manufacturing and agricultural industries. As the electrical industry has started deregulating, it has also become an increasing trend there. Also, in recent years, group purchasing has begun to take root in the nonprofit community. Group purchasing amongst nonprofits is still relatively new, but is quickly becoming common place as nonprofits aim to find ways to reduce overhead expenses. In the healthcare field, GPOs have most commonly been accessed by acute-care organizations, but non-profit Community Clinics and Health Centers throughout the U.S. have also been engaging in group purchasing.

History

The first healthcare GPO was established in 1910 by the Hospital Bureau of New York. For many decades, healthcare GPOs grew slowly in number, to only 10 in 1962.

Medicare and Medicaid stimulated growth in the number of GPOs to 40 in 1974. That number tripled between 1974 and 1977. The institution of the Medicare Prospective Payment System (PPS) in 1983 focused greater scrutiny on costs and fostered further rapid GPO expansion. In 1986, Congress granted GPOs in healthcare "Safe Harbor" from federal anti-kickback statutes after successful lobbying efforts. By 2007, there were hundreds of healthcare GPOs, "affiliates" and cooperatives in the United States that were availing themselves of substantial revenues obtained from vendors in the form of administrative fees, or "remuneration." 96 percent of all acute-care hospitals and 98 percent of all community hospitals held at least one GPO membership. Importantly, 97 percent of all not-for-profit, non-governmental hospitals participated in some form of group purchasing.

With healthcare costs rising sharply in the early 1980s, the federal government revised Medicare from a system of fee-for-service (FFS) payments to PPS, under which hospitals receive a fixed amount for each patient with a given diagnosis. Other insurers also limited what hospitals could charge. The result was a financial squeeze on hospitals, compelling them to seek new ways to manage their costs.

In specifically exempting GPOs from the Federal Anti-Kickback Law, many healthcare providers interpreted the act as an encouragement to the expansion of GPOs. Congress did not specify any limit on contract administration fees, but required the United States Department of Health and Human Services (HHS) to monitor such fees for possible abuse – particularly with respect to fees in excess of 3.0 percent.

In 1991, HHS promulgated safe harbor regulations, reflecting Congress' intent to permit contract administration fees and creating the additional safeguard that GPOs inform members of administrative fees in excess of 3.0 percent. Despite these safeguards, the Government Accounting Office (GAO) published a study in 2002 indicating that GPOs did not always in fact reduce the cost of supplies and equipment for hospitals, but in some cases increased these costs by as much as 37%. Further examining the practices of GPOs, the Federal Trade Commission (FTC) clarified that "safety zone thresholds do not prevent and should not be

appropriately read as preventing antitrust challenges to any of the alleged anticompetitive contracting practices..." of GPOs.

In 2002, the Senate Judiciary Committee's Antitrust Subcommittee imposed stricter standards on GPOs in healthcare, requiring the adoption of a Code of Conduct to which GPOs must subscribe.

Critics of GPOs charge that, as long as GPOs receive fees from the vendors they are charged with policing, the industry has anti-competitive contracting potential that should be subjected to further scrutiny and/or regulation.

Vertical-market GPO

A vertical GPO assists companies and organizations within a specific industry or market segment.

Healthcare GPO

A healthcare group purchasing organization (GPO) assists in promoting quality healthcare relief and assists diverse providers in effectively managing expenses. A GPO aggregates the purchasing volume of its members for various goods and services and develops contracts with suppliers through which members may buy at group price and terms if they choose to. GPOs typically provide contracted discounts on medical supplies, nutrition, pharmacy and laboratory. Some of the large GPOs have expanded contract portfolios to also offer discounts on office supplies and non-medical related services.

A GPO's earnings come from an "Administrative" fee. GPOs may collect an "Administrative" fee up to 3.0% of all sales volumes from the vendors that they negotiate a contract from, upon selling products to their member hospitals. These fees do not influence the prices negotiated. They are used to cover the GPO's operating expenses. If there is a remainder it is distributed back to the GPO owners; thus, GPO owners achieve cost-savings on the goods they choose to buy through group contracts, and also receive distributions back from the GPO. General GPO members may also receive some fee share as part of their member agreement, though this practice is no longer typical; thus the primary benefit to a GPO member is the access to deeply discounted pricing.

GPOs submit that their services allow for improved operating margins for healthcare providers, and that members enjoy value added benefits like clinical support, benchmarking data, supply chain support and comprehensive portfolios of products and services to address specific needs.

GPOs vary in their strategy for negotiating discounts with suppliers - from requiring that its members not join other GPOs (exclusivity) to requiring compliance to awarding single source contracts. As the healthcare industry becomes saturated with GPOs, pricing is one way for GPOs to bring in new members or convince members of another GPO to switch.

Foodservice or grocery GPO

A foodservice or grocery GPO focuses exclusively on the $600 billion foodservice marketplace, including food and food-related purchasing for multi-unit foodservice operators, contract negotiation and supply chain services. These negotiations are made with supplier/manufacturing agreements and purchasing contracts. Categories for grocer purchases include: poultry, fresh produce, frozen food products, fresh and frozen meats, candy and snacks, dairy and bakery, dry goods, disposables and beverages.

Industrial manufacturing GPO

A manufacturer's GPO succeeds in solving procurement and sourcing concerns by aggregating the demand for products and services used in the manufacturing and production process and delivering deep savings on raw materials, services and components by issuing rebates, discounts, and preferred pricing to its members. The combined buying power helps manufacturers save money on their purchases and more effectively compete against the largest global manufacturers.

Electrical GPO

A GPO in the electrical industry attempts to help energy consumers and businesses solve issues with the rising cost of electricity by pooling the electrical demand of multiple consumers, grouping them together, and through this, delivering savings to its members by obtaining more favorable electrical rates. The difference between residential and commercial rates can be quite large in many regions, and are at least 7% cheaper in every US state. The buying power of the resulting groups allows companies and individuals alike to save greatly on their electrical bills.

Non-profit GPO

Non-profit GPOs are similar to regular GPOs, but they are typically made of up a board of non-profit, community-based organizations working together to help lower their costs.

Horizontal-market GPO

Whereas a vertical GPO assists organizations in specific industries, such as health care, food service, legal, dairy, and industrial manufacturing, a horizontal GPO assists companies across a broad spectrum of industries.

Non-strategic, or indirect spend horizontal market GPO

A horizontal indirect spend GPO succeeds in reducing procurement costs by aggregating the demand for non-strategic, or indirect cost supplies and services used by a broad horizontal market spectrum of member client organizations by consolidating purchasing power and establishing contracts to achieve preferred pricing, terms, and service standards.

The resulting combined buying power helps the usually mid-size and larger member client organizations save money on their purchases of categories such as temporary labor services, office products, safety supplies, office equipment, packaging supplies, uniform & laundry services, pest control, and expedited parcel delivery. The consolidation of purchasing effort

with the GPO also allows member clients savings from reduced staffing overhead costs. According to an analysis by SpendMatters, from an adoption perspective, 15-20% of the Fortune 1000 currently use buying consortiums and 85% of the time, they're seeing 10%+ of savings in the categories in which they put through a consortium model.

The suppliers to this type of GPO offer preferred pricing, terms, and service standards because they experience lower overall selling expenses and the increased volume usually associated with the addition of a single very large customer.

CHECK YOUR PROGRESS

Explain the history of Group purchasing organization.

Explain the various sectors catered to by Group purchasing organization (GPO).

Elaborate on the advantages of procurement through Group purchasing organization (GPO).

2.11 NATIONAL ASSOCIATION OF STATE PROCUREMENT OFFICIALS

The National Association of State Procurement Officials (NASPO) is an American non-profit association formed by the top procurement officials for the fifty states and Washington, D.C. and dedicated to strengthening the state procurement community through education, research, and communication. It was formally established on January 29, 1947, in Chicago, Illinois, and is made up of the directors of the central purchasing offices in each of the 50 states, the District of Columbia and the territories of the United States. It is now based in Lexington, Kentucky.

NASPO, in collaboration with the National Institute of Governmental Purchasing (NIGP), formed the Universal Public Purchasing Certification Council (UPPCC) to encourage and award the Certified Public Purchasing Officer (CPPO) and Certified Professional Public Buyer (CPPB) designations to those working in the public purchasing arena and honors important public-sector procurement initiatives through its "Cronin Award for Procurement Excellence".

NASPO is an organization through which the member purchasing officials provide leadership in professional public procurement, improve the quality of procurement, exchange information and cooperate to attain greater efficiency, economy, and customer satisfaction. NASPO receives professional headquarters staff support through AMR Management Services, which is accredited by the AMC Institute. Services provided to NASPO include conference management, research and publications, board of directors and committee support, financial management and member services.

2.12 SELECTION IN PLANNING

Selection in Planning also known as SIP is a method of selection used to identify suitable vendors and contractors and is an alternative to selection through Tendering.

SIP has gained momentum in those environments where a customer's requirements are subject to ongoing changes or where the development of a project or procurement exercise is expected to be implemented gradually. In such circumstances customers may choose to employ the SIP process rather than issuing a formal tender.

The advantages of SIP are that changes to a customer's requirements or specifications do not require that this information be re-issued as would normally be the case with a tender (with the exception of minor modifications). Instead a customer, during the planning process of a project or procurement requirement, solicits ongoing information and feedback from prospective vendors and contractors making an assessment of their capability, skills, financial competitiveness and overall suitability during the communications process.

The SIP process is sometimes considered by critics to be a less formal procedure in which the qualification of vendors and contractors is not addressed with the same scrutiny as would be the case in a tender. This belief is however erreneous as the quality of the SIP process, just as with tendering, is at the discretion of the selector. Those customers bound by statutory procurement procedures or corporate policies governing the same, apply these requirements to the SIP process by means of ongoing dialogue and solicitation of information from vendors and contractors.

For these reasons and among specific industries, such as construction, as well as in certain economic environments, the SIP process is considered to be a viable alternative to traditional tendering and which has resulted in the rapid growth of this process in recent years.

CHECK YOUR PROGRESS

Discuss on National Association of State Procurement Officials

Explain Selection in planning

2.13 LEVERAGE (NEGOTIATION)

In negotiation, leverage is the power that one side of a negotiation has to influence the other side to move closer to their negotiating position. A party's leverage is based on its ability to award benefits or impose costs on the other side. Leverage has been described as "negotiation's prime mover," indicating its important role in bargaining and negotiation situations. Individuals with strong leverage can sometimes overcome weak negotiating skills, whereas those with poor leverage have a reduced likelihood of being successful even if they have strong negotiating skills.

In order for a negotiating side's leverage to work in their favor, the threats or promises they put forth must be perceived as credible by the opposing group. This does not mean that the threats and promises have to be based in facts, but the opposing group must believe that a specific threat or promise can be carried out and that it would make them better or worse off compared to the other side.

Leverage can be measured qualitatively in terms of how much one side has to lose from *not* coming to an agreement. Generally, the side or group that is most in need of an agreement has the least amount of leverage. The side or group that is willing to walk away (when this is a possibility) has the most amount of leverage.

A key aspect of leverage is that it is dynamic. This means that it can change as more information is gathered or the situation evolves. A hostage situation is a prime example of how leverage can be dynamic. Early on in a hostage situation, control is held by the hostage takers; they have the greatest leverage: the lives of their hostages. However, as the situation evolves, effective hostage negotiators can gain leverage, take control, and eventually free the hostages.

Types of leverage

There are three types of leverage: positive leverage, negative leverage, and normative leverage.

Positive leverage

Positive leverage is a negotiator's ability to provide things that his or her opponent wants. Positive leverage is based in the ability of one party to satisfy the needs of another party. The power from positive leverage comes from the opportunity to provide or withhold the needed item or action. The strength of this type of leverage is determined by the other alternatives available to the opposition (often referred to as the "BATNA" or the best alternative to a negotiated agreement). If there are others who can also fulfill the opposition's needs, then the leverage is weakened since the opposition can go elsewhere to receive what they need.

In politics, an example of positive leverage is logrolling, or vote trading. Legislators will promise to vote the way that another legislator wants on one issue in order to gain their opponent's vote on another issue.

Negative leverage

Negative leverage is a threat-based form of leverage that represents one side's ability to make the other side worse off. The power of negative leverage relies on loss aversion. Because potential losses are seen as worse than equivalent gains, negative leverage can be very powerful. However, it can also bring out strong reactions from the opposing party, straining the relationship. Neither party's interests are advanced by negative leverage except for the gain that the party employing the leverage may get towards their ultimate desired outcome from the negotiation.

Picketing in labor negotiations is an example of negative leverage. The goal of picketing is to attract negative attention to the employer, but the employees do not gain any material benefits from the act of picketing itself.

Normative leverage

Normative leverage relies on using social standards or norms to encourage consensus. This type of leverage is maximized when the negotiating groups agree on these social standards or norms and see them as relevant to the discussion at hand. Normative leverage stems from people's desire to be consistent and reasonable in their decision-making.

An example of normative leverage would be for one party to appeal to another's religious or moral standards as grounds for acting in a certain way. Richard Shell refers to the Hanafi hostage situation as an example of using normative leverage in his book on bargaining and negotiation. Hostage negotiators read from and discussed the Koran (or Quran) with the hostage takers in order to encourage the peaceful release of remaining hostages.

Improving leverage

Since leverage changes over the course of a negotiation, a party's leverage can be improved through a number of ways.

Creating coalitions

Forming a coalition with other parties during a negotiation can increase the amount of leverage that group has over opposition. The improved leverage is a result of group dynamics which often favor the group with the largest membership. Studies in social psychology have found that individuals will often conform to the beliefs of the larger group.

Gathering more information

As a negotiation moves forward, each party learns more about what the other side wants, its priorities, and its vulnerabilities. This information can shape the threats and promises that each side can make, as well as their weight. Gathering information about the opposition and limiting the release of information about your position can help a party gain or maintain leverage.

Time

Time can be a key factor in a negotiation. The party with the most patience and ability to wait has greater leverage. As time moves forward, leverage can shift if one group needs to come to a resolution sooner than the other. Transportation workers, for example, can use time to their advantage by conducting last minute strikes that put increased pressure on their employer to settle labor disputes in order to be able to fulfill their obligations to their customers.

boost their ego…

– To gain leverage, feed the ego when such is sought and/or required (i.e. feeding vanity can be a great source of motivation for the other negotiator to grant concessions at times. The reason being, she may want to appear to be magnanimous).

Coercion

If leverage is abused it can lead to coercion. This happens most often with the use of negative leverage. The improper use of negative leverage can put the opposing party in duress, leading them to make decisions that they normally would not if they had free will. Abuse of positive leverage can also lead to coercion, including bribery and blackmail.

CHECK YOUR PROGRESS

Discuss Leverage in negotiation for procurement.

What is the measure of leverage of one party against the other in negotiation?

Describe types of leverages in negotiations.

Explain how leverages may be improved.

2.14 END QUESTIONS

1. Describe Purchasing.
2. Explain the importance of purchasing.
3. Elaborate Purchasing process
4. Explain the various issues in purchase process.
5. Discuss Purchasing management
6. Elaborate on the importance of purchase management
7. Explain Procurement
8. Discuss the importance of procurement in hotel business
9. Distinguish between concepts of procurement, acquisition and purchase.
10. Give a detailed account of E-procurement
11. Explain the advantages of e-procurement.
12. Elaborate Procurement outsourcing
13. Explain the advantages and disadvantages of procurement outsourcing.
14. Explain Agreement on Government Procurement
15. Broadly outline the features of Agreement on Government Procurement
16. Elaborate on Strategic sourcing
17. Explain the importance of strategic outsourcing in the fields of hospitality, catering and tourism.
18. Describe Global sourcing
19. Explain the importance of Global sourcing.
20. Explain the history of Group purchasing organization.
21. Explain the various sectors catered to by Group purchasing organization (GPO).
22. Elaborate on the advantages of procurement through Group purchasing organization (GPO).
23. Discuss on National Association of State Procurement Officials
24. Explain Selection in planning
25. Discuss Leverage in negotiation for procurement.

26. What is the measure of leverage of one party against the other in negotiation?
27. Describe types of leverages in negotiations.
28. Explain how leverages may be improved.

2.15 REFERENCES AND FURTHER READING

Wikipedia (n.d.) entries on

Purchasing
Purchasing process
Purchasing management
Procurement
E-procurement
Procurement outsourcing
Agreement on Government Procurement
Strategic sourcing
Global sourcing
Group purchasing organization
National Association of State Procurement Officials
Selection in planning
Leverage (negotiation)

UNIT 3 PROCUREMENT PROCEDURE - II

3.00 INTRODUCTION

We have studied many concepts in the procurement procedures in Unit 2. We will continue to explore these important activities of management of hospitality, catering and tourism industry further in this unit. We will begin our study with **Expediting,** which is a concept in purchasing and project management for securing the quality and timely delivery of goods and components. Expediting is especially needed in large scale projects, for example, when a power plant or a refinery is erected, because of a delay caused by late delivery or inferior quality will get very expensive and could lead to unsatisfied clients, thus the loss of a project.

I will then take you to the concept of Total cost of acquisition (TCA). This is a managerial accounting concept that includes all the costs associated with buying goods, services, or assets. Next, we study Spend analysis, which is the process of collecting, cleansing, classifying and analyzing expenditure data with the purpose of decreasing procurement costs, improving efficiency, and monitoring compliance. It can also be leveraged in other areas of business such as inventory management, budgeting and planning, and product development.

I will give you an idea about an interesting concept called '**turnkey'** or a '**turnkey project'.** This is a type of project that is constructed so that it can be sold to any buyer as a completed product. This is contrasted with build to order, where the constructor builds an item to the buyer's exact specifications, or when an incomplete product is sold with the assumption that the buyer would complete it. Suppose you want to develop a Hotel at a location. You may give several contract to separate contractors: civil construction, landscape artist, interior designer, electrical contractor, furniture vendor, etc. Alternatively you may call for a tender on turnkey basis and give it to a single vendor who would be responsible for integrating all these services and hand over to you the key to the finished and furnished hotel.

The process of managing an establishment like a hotel also involved Contract management or contract administration. This is the management of contracts made with customers, vendors, partners, or employees. The personnel involved in contract administration required to negotiate, support and manage effective contracts are often expensive to train and retain. **Performance-based contracting** (**PBC**), also known as **performance-based logistics** (**PBL**) or **performance-based acquisition**, is a product support strategy used to achieve measurable supplier performance. A **Rate Contract** or a **Rate Agreement** (RC in short) is a procurement cost reduction strategy aimed at standardizing procurement prices for commonly procured, homogenous and price varying inputs.

A **call for bids**, **call for tenders**, or **invitation to tender** (**ITT**, often called **tender** for short) is a special procedure for generating competing offers from different bidders looking to obtain an award of business activity in works, supply, or service contracts. A **purchase order** (**PO**) is a commercial document and first official offer issued by a buyer to a seller, indicating types, quantities, and agreed prices for products or services. You may also need to know another method of procuring which is known as auction. An **auction** is a process of buying and selling goods or services by offering them up for bid, taking bids, and then selling the item to the highest bidder. The open ascending price auction is arguably the most common form of auction in use today. Participants bid openly against one another, with each subsequent bid required to be higher than the previous bid.

3.01 UNIT OBJECTIVES

After completing this Unit you will be able to

Explain the concepts related to Expediting the purchase process
Explain the major considerations while arriving at Total cost of acquisition
Elaborate the process of Spend analysis
What is the importance of Turnkey projects.
Explain the major processes in Contract management
Describe the concept of Performance-based contracting
Explain the importance and purpose of a Rate contract
Discuss the processes involved in the Call for bids
Explain the main features of Tender notification
Explain the activities involved in Presales
Explain the importance of a Purchase order
Explain the salient features of Auction
Give a detailed account of three types of auctions.
Explain in details the processes and importance of Reverse auction

3.02 EXPEDITING THE PURCHASE

Expediting is a concept in purchasing and project management for securing the quality and timely delivery of goods and components.

The procurement department or an external expeditor controls the progress of manufacturing at the supplier concerning quality, packing, conformity with standards and set timelines. Thus the expeditor makes sure that the required goods arrive at the appointed date in the agreed quality at the agreed location.

Purpose

Expediting is especially needed in large scale projects, for example, when a power plant or a refinery is erected, because of a delay caused by late delivery or inferior quality will get very expensive and could lead to unsatisfied clients, thus the loss of a project. To save these unnecessary costs and minimize potential risks, the supplier and customer may agree on the use of a third party expeditor. These are experts from companies specializing in this field who keep track of the deadlines, supervise progress on site and check whether the components are properly packed. After inspection they notify the involved parties and banks about their findings; if everything is as agreed the bank will initiate the transfer of the price of the goods to the supplier. In this way, the supplier secures his liquidity as he is paid immediately when the components leave his factory (letter of credit) and the customer/bank knows that the goods will be delivered correctly. Expediting is relevant for many industries, such as the oil and gas industry, the general energy industry and the infrastructure industry.

Expediting exists in several levels:

Production control: The expeditor inspects the factory whether the production is up to the standards of the country the goods are destined for. This is especially necessary for food or engineering equipment like power plant components. He or she controls as well whether the regular audits for ISO 9001 etc. have been made.

Quality control: The components are tested whether they function as required and whether they are made to the measurements and standards of the customer. A part of this quality control can be the testing for compliance with standards of the destination country, e.g. ASME.

Packing/transport survey: This is the lowest and most used level of expediting, as the goods are only counted and the packing is controlled whether it will withstand the adversities of transport (pre-shipment inspection).

Project management: At a large-scale project, not only goods are controlled. The expeditor also keeps an eye on the deadlines and milestones of the project and whether the supplier will be on time. This way he or she monitors the crucial procurement parts of the project.

As the different levels of expediting require different skills, specialists and laboratories, many third party expeditors specialize in only one or several of these levels, while few offer expediting services on all levels.

Larger companies normally have their own expeditors who can perform all four levels. Third parties then are only used when in-house capacity is overstretched or a neutral third party is needed. But In case of some big companies if the no. of project running same time, Big companies use third party expeditors also.

Most of the time companies use third party inspector expeditors who are responsible for inspection of critical items as well as expediting. In strict quality control conditions, those quality inspector expeditors will give importance to quality work, rather than to expediting work, which may not be a useful technique to get expediting work completed.

Field expediting

Field expediting provides clients with a comprehensive review of the precise standing of their order and any on site action to rectify any potential problem areas. Field expediting means the inspection and control of the expeditor on site. This gives clients a comprehensive review of the exact current status of their order and an educated projection of the future planning and status. Furthermore, while being on site, experts for expediting can identify possible problems and bottlenecks that could lead to potential delays.

Desk expediting

Desk expediting is also known as telephone expediting. It is an important tool for producing companies to monitor order progress with manufacturers. Especially at milestone of a project, desk expediting can be helpful to check whether the project is still within the agreed schedule. Although desk expediting is a quick and easy way to be informed about the current status of a project, it should always be conducted in combination with field expediting to securely verify the actual status.

Telephone expediting

Desk/Phone expediting provides a valuable tool for monitoring the progress of orders with a manufacturer. Contact is established at specific milestones within the order fabrication method and a brief outline of status standing obtained throughout the following conversation. associate experienced expeditor will very quickly assess whether the order is progressing consistent with plan or whether alternative measures are needed to verify and presumably improve the order progress. desk / phone expediting is best used as a tool to supplement field expediting. it's additionally a helpful approach of making the vendor aware that delays on the order won't be accepted by their shopper.

CHECK YOUR PROGRESS

Explain the concepts related to Expediting the purchase process

3.03 TOTAL COST OF ACQUISITION

Total cost of acquisition (**TCA**) is a managerial accounting concept that includes all the costs associated with buying goods, services, or assets.

Generally, it is the net price plus other costs needed to purchase the item and get it to the point of use. These other costs can include: the item's purchasing costs (closing, research, accounting, commissions, legal fees), transportation, preparation and installation costs.

Typically they do not include training, system integration costs that might be considered operational costs.

CHECK YOUR PROGRESS

Explain the major considerations while arriving at Total cost of acquisition

3.04 SPEND ANALYSIS

Spend analysis is the process of collecting, cleansing, classifying and analyzing expenditure data with the purpose of decreasing procurement costs, improving efficiency, and monitoring compliance. It can also be leveraged in other areas of business such as inventory management, budgeting and planning, and product development.

There are three core areas of spend analysis - visibility, analysis and process. By leveraging all three, companies can generate answers to the crucial questions affecting their spending, including:

- What am I really spending?
- With whom am I spending it?
- Am I getting what's been promised for that spend?

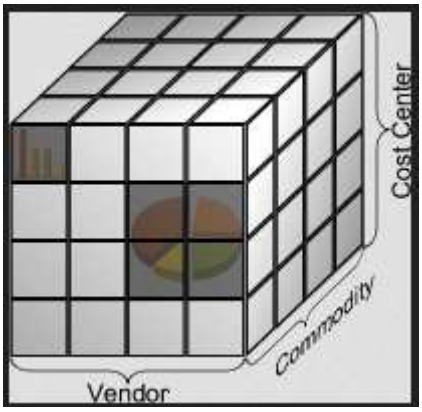

Fig 3.01: Spend Cube

Spend analysis is often viewed as part of a larger domain known as spend management which incorporates spend analysis, commodity management and strategic sourcing.

Companies perform spend analysis for several reasons. The core business driver for most organizations is profitability. In addition to improving compliance and reducing cycle times, performing detailed spend analysis helps companies find new areas of savings that previously went untapped, and hold on to past areas of savings that they have already negotiated.

Automated spend analysis software can be a valuable tool for chief procurement officers (CPOs) at large, global, diversified enterprises, and a useful tool for many others. The resulting spend visibility helps CPOs and CFOs gain insight into what their company buys and from whom, and it helps them realize savings promised by past sourcing efforts. The original approach to building spend cubes and the name "spend cube" refers to the three dimensions of the cube - Suppliers, Corporate business units, and Category of item. The contents in the cube are the price and volume of items purchased. John Anderson and Laura Boteler, of A.T. Kearney, Inc., developed the first spend cubes to be used in strategic sourcing.

CHECK YOUR PROGRESS

Elaborate the process of Spend analysis

3.05 TURNKEY PROJECT

A **turnkey** or a **turnkey project** (also spelled **turn-key**) is a type of project that is constructed so that it can be sold to any buyer as a completed product. This is contrasted with build to order, where the constructor builds an item to the buyer's exact specifications, or when an incomplete product is sold with the assumption that the buyer would complete it.

A turnkey project or contract as described by Duncan Wallace (1984) is:

…. a contract where the essential design emanates from, or is supplied by, the Contractor and not the owner, so that the legal responsibility for the design, suitability and performance of the work after completion will be made to rest … with the contractor …. 'Turnkey' is treated as merely signifying the design responsibility as the contractor's.

A turnkey computer system is a complete computer including hardware, operating system and application(s) designed and sold to satisfy specific business requirements.

Common usage

Turnkey refers to something that is ready for immediate use, generally used in the sale or supply of goods or services. The word is a reference to the fact that the customer, upon receiving the product, just needs to turn the ignition key to make it operational, or that the key just needs to be turned over to the customer. Turnkey is often used to describe a home built on the developer's land with the developer's financing ready for the customer to move in. If a contractor builds a "turnkey home" they frame the structure and finish the interior. Everything is completed down to the cabinets and carpet. "Turnkey" is commonly used in the construction industry, for instance, in which it refers to the bundling of materials and labour by Home Builder or General Contractor to move into the home without owner involvement. 'Turnkey' is also commonly used in motorsports to describe a car being sold with drivetrain (engine, transmission, etc.) to contrast with a vehicle sold without one so that other components may be re-used.

Similarly, this term may be used to advertise the sale of an established business, including all the equipment necessary to run it, or by a business-to-business supplier providing complete packages for business start-up. An example would be the creation of a "turnkey hospital" which would be building a complete medical centre with installed medical equipment.

Specific usage

The term turnkey is also often used in the technology industry, most commonly to describe pre-built computer "packages" in which everything needed to perform a certain type of task (e.g. audio editing) is put together by the supplier and sold as a bundle. This often includes a computer with pre-installed software, various types of hardware, and accessories. Such packages are commonly called appliances. A website with a ready-made solutions and some configurations is called a turnkey website.

Turnkey products are synonymous to "off-the-shelf" solutions and not customized.

In real estate, **turnkey** is defined as a home or property that is ready for occupation for its intended purpose, ie., a home that is fully functional, needs no upgrading or repairs (move-in ready). In commercial use, a building set up to do auto repairs would be defined as turnkey if it came fully stocked with all needed machinery and tools for that particular trade. The turnkey process includes all of the steps involved to open a location including the site selection, negotiations, space planning, construction coordination and complete installation. **Turnkey** real estate also refers to a type of investment. This process includes the purchase, construction or rehab (of an existing site), the leasing out to tenants, and then the sale of the property to a buyer. The buyer is purchasing an investment property which is producing a stream of income.

In drilling, the term indicates an arrangement where a contractor must fully complete a well up to some milestone to receive any payment (in exchange for greater compensation upon completion).

CHECK YOUR PROGRESS

What is the importance of Turnkey projects.

3.06 CONTRACT MANAGEMENT

Contract management or **contract administration** is the management of contracts made with customers, vendors, partners, or employees. The personnel involved in contract administration required to negotiate, support and manage effective contracts are often expensive to train and retain. Contract management includes negotiating the terms and conditions in contracts and ensuring compliance with the terms and conditions, as well as documenting and agreeing on any changes or amendments that may arise during its implementation or execution. It can be summarized as the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk.

Common commercial contracts include employment letters, sales invoices, purchase orders, and utility contracts. Complex contracts are often necessary for construction projects, goods or services that are highly regulated, goods or services with detailed technical specifications, intellectual property (IP) agreements, outsourcing and international trade. Most larger contracts require the effective use of contract management software to aid administration among multiple parties.

A study has found that for "42% of enterprises...the top driver for improvements in the management of contracts is the pressure to better assess and mitigate risks" and additionally,"nearly 65% of enterprises report that contract lifecycle management (CLM) has improved exposure to financial and legal risk."

Contracts

A contract is a written or oral legally-binding agreement between the parties identified in the agreement to fulfill the terms and conditions outlined in the agreement. A prerequisite requirement for the enforcement of a contract, amongst other things, is the condition that the parties to the contract accept the terms of the claimed contract. Historically, this was most commonly achieved through signature or performance, but in many jurisdictions - especially with the advance of electronic commerce - the forms of acceptance have expanded to include various forms of electronic signature.

Contracts can be of many types, e.g. sales contracts (including leases), purchasing contracts, partnership agreements, trade agreements, and intellectual property agreements.

- A sales contract is a contract between a company (the seller) and a customer where the company agrees to sell products and/or services and the customer in return is obligated to pay for the product/services bought.

- A purchasing contract is a contract between a company (the buyer) and a supplier who is promising to sell products and/or services within agreed terms and conditions. The company (buyer) in return is obligated to acknowledge the goods / or service and pay for liability created.
- A partnership agreement may be a contract which formally establishes the terms of a partnership between two legal entities such that they regard each other as 'partners' in a commercial arrangement. However, such expressions may also be merely a means to reflect the desire of the contracting parties to act 'as if' both are in a partnership with common goals. Therefore, it might not be the common law arrangement of a partnership which by definition creates fiduciary duties and which also has 'joint and several' liabilities.

Areas of contract management

The business-standard contract management model, as employed by many organizations in the United States, typically exercises purview over the following business disciplines:

- Authoring and negotiation
- Baseline management
- Commitment management
- Communication management.
- Contract visibility and awareness
- Document management
- Growth (for Sales-side contracts)
- Contract compliance/governance

Change management

There may be occasions where what is agreed in a contract needs to be changed later on. A number of bases may be used to support a subsequent change, so that the whole contract remains enforceable under the new arrangement.

A change may be based on:

- A mutual agreement of both parties to vary the contract, outside the framework of the existing contract. This would be an independent basis for changing the contract.
- A unilateral decision to vary the contract, contemplated and allowed for by the existing contract. This would normally have notice periods for fairness and often the right of the other, especially in consumer contracts, to cease the contractual relationship. Be careful that any one-way imposition of change is contractually justified, otherwise it may be interpreted as a repudiation of the original contract, enabling the other party to terminate the contract and seek damages.
- A bilateral decision to vary the contracting, within the variation or change control process outlined in the existing contract. These are often called change control provisions.

Phases of contract management

Contract management can be divided into three phases namely

- pre- contract phase
- contract execution phase
- post award phase (often referred to as contract compliance/governance)

Contract compliance/governance

During the post-award phase, it is important to ensure that contract conditions and terms are met, but it is also critical to take a closer look for items such as unrecorded liabilities, under-reported revenue or overpayments. If these items are overlooked, margin may be negatively impacted. A contract compliance audit will often commence with an opportunity review to identify the highest risk areas. Having a dedicated contract compliance (and/or governance) program in place has been shown to result in a typical recovery of 2-4% and sometimes as high as 20%.

Current thinking about contract management in complex relationships is shifting from a compliance "management" to a "governance" perspective, with the focus on creating a governance structure in which the parties have a vested interest in managing what are often highly complex contractual arrangements in a more collaborative, aligned, flexible, and credible way. In 1979, Nobel laureate Oliver Williamson wrote that the governance structure is the "framework within which the integrity of a transaction is decided." He further added that "because contracts are varied and complex, governance structures vary with the nature of the transaction." (See also relational contract). Eriksson and Westerberg (2011); Li, Arditi, and Wang (2012); Chen and Manley (2014), and Cardenas, Voordijk, and Dewulf (2017) have hypothesized, developed and extensively tested conceptual models in which relevant project governance instruments and factors were identified and related to the performance of construction projects.

A collaborative governance framework has four components:

- A relationship management structure (how the parties work together to make both day to day operational decisions as well as strategic decisions)
- A joint performance and transformation management process designed to track the overall performance of the partnership
- An exit management plan as a controlling mechanism to encourage the organizations to make ethical, proactive changes for the mutual benefit of all the parties.
- Compliance to special concerns and regulations, which include the more traditional components of contract compliance

CHECK YOUR PROGRESS

Explain the major processes in Contract management

3.07 PERFORMANCE-BASED CONTRACTING

Performance-based contracting (**PBC**), also known as **performance-based logistics** (**PBL**) or **performance-based acquisition**, is a product support strategy used to achieve measurable supplier performance. A PBC approach focuses on developing strategic performance metrics and directly relating contracting payment to performance against these metrics. Common metrics include availability, reliability, maintainability, supportability and total cost of ownership. The primary means of accomplishing this are through incentivized, long-term contracts with specific and measurable levels of operational performance defined by the customer and agreed on by contracting parties. This

stands in contrast to the conventional transaction-based, or waterfall approach, where payment is related to completion of milestones and project deliverables.

Performance-Based approaches are most widely used the defense industry, but can be applied across any spend category.

Overview

PBC is about buying performance, not transactional goods and services, through an integrated acquisition and logistics process delivering improved capability to a range of products and services. PBC is a support strategy that places primary emphasis on optimising system support to meet the needs of the user. PBCs delineate outcome performance goals, ensure that responsibilities are assigned, provide incentives for attaining these goals, and facilitate the overall life-cycle management of system reliability, supportability, and total ownership costs. A PBC in practice involves a contracting agency (who are contracting the work to an external provider) and a contractor (who are responsible for completing the work set out in the contract). Several other parties are often involved, including subcontractors, a legal team and consultants. These parties work for both contracting agency and contractor completing various elements of work associated with contract development, contracted work completion or performance management / measurement.

United States federal law defines performance-based acquisition and treats it as "the preferred method for acquiring services".

Implementation

A typical process for implementing a PBC is as follows:

1. Business Case – a document which reviews potential risks, benefits and other potential impacts of a PBC, usually presented to senior managers to aid in their decision making
2. Outcomes – a short statement reflecting the desired result or final deliverable of the contract
3. Measures – define a set of performance measures that collectively measure the organisations performance against the outcome statement
4. Levels – set performance levels for the performance measures, i.e. how well the contractor needs to perform
5. Payment – develop a set of payment curves which set out the pay for performance regime i.e. how much the contractor gets paid for their performance level
6. Incentives – set out a group of incentives that encourage positive behaviours and discourage negative behaviours
7. Contract – draft, review, workshop and finalise a contract which covers all aspects of the performance, payment and terms and conditions of the relationship
8. Review – conduct an analysis of the outcomes of the PBC, taking into account the differing definitions of success from the different groups involved in the contract.

Naming

PBC is the name used in Australia, New Zealand and Canada to describe the practice of attaching contract payment to a set of performance metrics. It is commonly known as performance-based logistics in the US and Contracting for Availability or Contractor Logistics Support in the UK. Although it was developed in the US for defence applications, and is most actively applied there, PBC strategies are growing in popularity around the world and in industry sectors other than defence. In

particular, PBC frameworks are becoming popular in shipping, transport, health services and the energy sector.

Alternative terms include:

- Performance-based life-cycle product support
- Contracting for Availability
- Contractor Logistics Support (CLS)
- Contracting for Capability
- Power-By-The-Hour
- Managed Services (or IT and BPO Business Process Outsourcing contracts)
- Facilities Management contracts

Applications

Defence

PBC is widely applied in the Australian defence sector, primarily by the major acquisition and support organisation, the Defence Material Organisation (DMO). It is particularly useful in the defence environment because of the inherent complexity and large scale of the projects. Recently, Australian Defence has initiated an escalation of the use of PBCs with the strategic aims of improving capability outcomes and reducing total cost of ownership. In Australia and the US, PBC frameworks are most commonly applied in Defence situations.

PBC frameworks are currently being used in numerous Defence related projects, including:

- BAE Systems Hawk
- Eurofighter Typhoon
- Anzac class frigates
- Royal Australian Armoured Corps vehicles
- Collins class submarines
- GE Aviation
- Lockheed Martin

Industry

Although it is applied primarily in the defence environment, PBC is becoming more popular in a broader range of private and public sector organisations as they seek to reduce costs and create a closer link between expenditure and performance goals.

Areas outside defence where PBC is applied include:

- Commercial Shipping
- Public Transport
- Health Services
- Energy Generation
- Maintenance, Repair and Overhaul
- Commercial Airlines
- Manufacturing
- IT and Business Process Outsourcing (BPO)
- Facilities Management

Some examples:

- PBC for Australian Road Maintenance. This case study provides insight into road maintenance contracts conducted in Western Australia and New South Wales. In both instances, very positive outcomes are recorded. Another case study related to Performance Based Contracting in Road Maintenance claims that in 2005, 35 countries were employing PBC for Road Maintenance, and in 2006 15 others had implemented a PBC or were investigating its use.

PB Contracts as related to Sourcing Business Models

Procurement/Sourcing Business Models

A performance-based model is one of seven Sourcing Business Models. Sourcing Business Models theory is a systems-based approach to structuring supplier relationships. A sourcing business model is a type of business model that is applied to business relationships where more than one party needs to work with another party to be successful. There are seven sourcing business models that range from the transactional to investment-based. The seven models are: Basic Provider, Approved Provider, Preferred Provider, Performance-Based/Managed Services Model, Vested Business Model, Shared Services Model, and Equity Partnership Model. Sourcing business models are targeted for procurement professionals seeking a modern approach for achieving the best fit between buyers and suppliers. Sourcing business model theory is based on a collaborative research effort by the University of Tennessee (UT), the Sourcing Industry Group (SIG) the Center for Outsourcing Research and Education (CORE), and the International Association for Contracts and Commercial Management (IACCM). Their initial research formed the basis for the 2015 book, *Strategic Sourcing in the New Economy: Harnessing the Potential of Sourcing Business Models in Modern Procurement.*

Studies

There is discussion about the efficacy of PBC as a product support measure. However, there is significant research to suggest that PBC can reduce costs and result in better supplier outputs/performance against metrics than traditional contracting approaches, such as transaction-based contracts. The U.S. Department of Defense/Air Force/Defense Acquisition University sponsored a research project conducted by the University of Tennessee study An American study into the effectiveness of PBC frameworks in Defence projects. The study found that projects employing a true PBC framework resulted in substantially lower costs and improved system readiness / capability when compared to non-PBC arrangements. The U.S. Department of Defense has many documented case studies from award winning PBL contracts.

In addition, a study by Booz Allen Hamilton found that even incorporating a small amount of a PBC framework into weapons system support will create positive results.

In a more general sense, implementing a PBC framework has a broad range of benefits for organisations, contractors and contracting agencies , including:

- Improved contracting for supplier performance against supplier metrics
- Reduction in Total Cost of Ownership (TCO)
- Ability to accurately forecast cost within contract bounds
- Improved accountability for performance
- Development of a clear understanding of performance requirements
- Promotion of strategic benefits for Contracting Agency and Contractor
- Integration of all contracting aspects in a single set of performance measures

- A 'Fair' contract
- A greater understanding of life-cycle costs

CHECK YOUR PROGRESS

Describe the concept of Performance-based contracting

3.08 RATE CONTRACT

A **Rate Contract** or a **Rate Agreement** (RC in short) is a procurement cost reduction strategy aimed at standardizing procurement prices for commonly procured, homogenous and price varying inputs.

Timing

A rate contract is usually attempted when a global sourcing effort is not feasible, due to financial or operational constraints. A rate contract is also typically established in inputs where the number of suppliers is large (where it is not a monopoly or an oligopoly).

Level

Rate contracts can be arranged at various levels by a large firm - in specific geography markets or at a national level or at a global level (if suppliers exist at differing scales) and in specific sub-categories, or in a range of sub-categories, or for a category, or for a related categories. The rate contract can also be established for a year or for multiple-years. The level of the rate contract agreed depends on:

1. The level of standardization of the input
2. The predictability of procurement spend
3. The nature of the supplier market
4. The pricing power of the procurer as against the supplier.

Process of setup

The process of setting up a rate contract in a category follows a set of standard steps:-

1. Procurement spend analysis: Identification of cumulative spend, identification of key suppliers and their share of business, identification of average price of procurement, spend growth projections
2. Market analysis: Study of the nature of the market, exhaustive identification of suppliers and their capabilities, study of supplier cost structures. One of the primary objectives of this step is the identification and introduction of new suppliers
3. *Supplier Interactions*: Selection of a fit-list of suppliers, invitation to suppliers for discussions, supplier discussions and interactions, RFQ to selected suppliers
4. *Receipt of Quotes* from suppliers
5. *Selection of a fit list* of suppliers

6. Agreement on the points of the rate contract and *finalization of the rate contract*

Post the setup of a rate contract, a definitive *monitoring mechanism* must be set up. Such a monitoring mechanism needs to be done centrally by the organization and involves - monitoring of offtake by supplier, monitoring of non-RC offtake and monitoring of supplies and periodic quality audits. Without the setup of a monitoring mechanism, much of the effectiveness and purpose for a setup might be lost.

Special Types

A *frame agreement* is a special type of rate agreement entered with a set of suppliers, with a specific subset (may be just one) chosen as preferred. Frame agreements possess similar clauses as standard rate agreements with a few additional (optional) points such as

- decreasing prices over time
- quality control obligations for the supplier
- minimum or maximum offtakes during the validity period
- provisions for vendor-managed inventory

The UNHCR procures a large percentage of its requirements under frame agreements.

CHECK YOUR PROGRESS

Discuss the processes involved in the Call for bids

3.09 CALL FOR BIDS

A **call for bids**, **call for tenders**, or **invitation to tender** (**ITT**, often called **tender** for short) is a special procedure for generating competing offers from different bidders looking to obtain an award of business activity in works, supply, or service contracts. They are usually preceded by a pre-qualification questionnaire (PQQ).

Types

Open tenders, open calls for tenders, or advertised tenders are open to all vendors or contractors who can guarantee performance.

Restricted tenders, restricted calls for tenders, or invited tenders are only open to selected prequalified vendors or contractors. This may form part of a two-stage process, the first stage of which (as in the expression-of-interest (EOI) tender call) produces a shortlist of suitable vendors.

The reasons for restricted tenders differ in scope and purpose. Restricted tenders can come about because:

- essentially only one suitable supplier of the services or product exists
- of confidentiality issues (such as in military contracts)
- of the need for expedience (as in emergency situations)
- of a need to weed out tenderers who do not have the financial or technical capabilities to fulfill the requirements

Origin of the term

Dictionaries explain the etymology as coming from Old French *tendre*, which means "to offer".

The following false etymology is sometimes heard:

- When merchant ships arrived at a port of call, they would post a notice describing the goods they wished to buy or sell. This notice was delivered ahead of the ship by a tender—a small boat—and hence the process became known as tendering.

Double envelope system

In an open bid or tender system, a double envelope system may be used. The double envelope system separates the technical proposal (based on and intended to meet the statement of work) from the financing or cost proposal in the form of two separate and sealed envelopes.

During the tender evaluation, the technical proposal would be opened and evaluated first followed by the financing proposal.

The objective of this system is to ensure a fair evaluation of the proposal. The technical proposal would be evaluated purely on its technical merits and its ability to meet the requirements set forth in the Invitation without being unduly skewed by the financial proposal.

Tender box

A tender box is a mailbox that is used to receive the physical tender or bid documents. When a tender or bid is being called, a tender or bid number is usually issued as a reference number for the tender box. The tender box would be open for interested parties to submit their proposals for the duration of the bid or tender.

Once the duration is over, the tender box is closed and sealed and can only be opened by either the tender or bid evaluation committee or a member of the procurement department with one witness.

Security deposit

Registered contractors are usually required to furnish a bond for a stipulated sum as security or earnest money deposit to be adjusted against work done, normally in the form of bank guarantee or surety.

Locating tenders

Public sector organizations in many countries are legally obliged to release tenders for works and services. In the majority of cases, these are listed on their websites and traditional print media. Electronic procurement and tendering systems or e-procurement are also increasingly prevalent.

A number of companies provide subscription alert services which send notifications of relevant tender documents to the subscriber.

An array of private organisations also assist businesses in finding out about these tenders. Cost may vary from a few pounds a week to a few hundred.

Because of the specialised language and sometimes difficult-to-grasp procedures, some organizations also offer companies tender writing training, or do the writing for them.

Typical template contents (in project management)

A typical invitation to tender template in any project has the following sections:

- Introduction
- Project background
- Legal issues
- Maintaining issues
- Supplier response required
- Timetable for choosing a supplier
- Requirements

CHECK YOUR PROGRESS

Explain the importance and purpose of a Rate contract

3.10 TENDER NOTIFICATION

A **tender notification** is an online service, which in more recent times is provided through the delivery model software as a service. Historically, the service would be provided by basic coding techniques in PHP code, when a new tender had been published. Since then, the industry has grown to provide fully automated systems that deliver various forms of communication to notify users of tendering opportunities. Typically, services are delivered in the form of an e-mail and are commonly for open tenders, which allow any potential supplier to register interest in a tender opportunity.

Some may argue that notification services have become integral to open tenders and the process. Notification services are often the main form of communication to the client that a new tender is available. People closely linked with the providing end user, may receive communication directly, but with the growth of the notification industry, this is becoming unlikely. Procurement software sometimes incorporates the tendering data into packages to make the information more accessible for suppliers interested in various tenders.

Many of the direct notification packages often have a targeted market or segment, often from one or two providers, for example a county council or large government institution. Repacks allow for greater numbers of tenders and often cover multiple countries, segments and markets.

Types of notifications

Direct

These are normally opportunities that are sent direct from the system they were created on. For example if a government institution used a certain brand of tendering software, then this brand would also offer a tender service to notify the user of tenders on that specific system.

Repacks

Repacks are normally provided by external organizations and software as a service providers. Feeds from multiple sources are combined, collated and then sent out. The aim of repacks is normally to give the supplier as many opportunities as possible on a daily basis.

Normally where feeds from multiple sources are combined, collated and then sent out. The aim is obvious here, to give the supplier as many opportunities as possible on a daily basis. However, due to the information often being second or third hand, some data can be lost in the process, or may become inaccurate as it is passed down the line. The collated information tends include a range of sectors, from construction to healthcare tenders.

Similar processes

A request for tender and request for quotation is a closed tender where people are invited by a buyer to quote for specific work. A tender notification alerts potential suppliers of open tenders that they then have to register interest in before entering the tendering process.

Invitation to tender is also a similar process to a tender notification. The major difference is the institution or organisation who created the tender chooses who to invite, often in the form of a closed tender. Tender notification services provide a vast array of people and companies about an open tender that anyone can apply for.

Benefits

Tender notifications (sometimes called tender alerts), provide the client with given tender information that they desire. This is often delivered in the form of an email notification, saving the client visiting multiple websites to check for updates on potential clients. Most repacks provide both private and public sector tender opportunities. The idea is that tender notification systems deliver tender opportunities to the company, dramatically reducing the amount of time spent looking for these tenders.

CHECK YOUR PROGRESS

Explain the main features of Tender notification

3.11 PRESALES

Presales is a process or a set of activities/sales normally carried out before a customer is acquired, though sometimes presales also extends into the period the product or service is delivered to the customer. The sale of service or goods before its release date generally has a discount rate greater than 50%, this is done as the producer wants to assess the markets willingness to pay and buy the product due to the risk factor being very high.

Reasoning

Presales are done usually due to the business in question who offer goods or services, unsure of the markets willingness to buy the product or service in question. The use of presales gives an educated overview of sales made due to presales and an educated guess of future sales. This marketing technique helps insure a more concentrated number of goods or services needed/wanted so that the company/business does not exhaust resources in goods or services when they are not being utilized, thereby causing waste and loss in profits. Example of this would be presales in video games; games are advertised over many media channels to help promote and increase likability to its target demographic. Presales usually offer extra content or merchandise which would normally be of high price for free, thereby increasing the perceived value of this product. This gives the manufacturer/company of how many units to produce, already knowing the return on releasing the video game.

Responsibilities

In a typical sales cycle the stages are:

1. Contact
2. Lead / Suspect
3. Prospect / Opportunity.

The task of a presales person starts from the initial contact phase and often ends once the customer is acquired i.e. sale is made. In some cases, presales also provide some initial or transitional support post sale.

The responsibilities differ from organization to organization but in general include:

1. Solution Preparation/Management Proposal based on Customers Requirements
2. Product demonstrations
3. Proof of Concept Creation
4. Creation of Marketing Documents
5. ... and any other activity required to generate business

The Software Industry and IT Services Industry provide a vital and significant role for presales professionals. The role of presales falls right in the middle marrying the customer needs to the (provider) company's services or products. This role is especially crucial in these industries because the products and services are often heavily customizable and also because the requirements of different customers are often unique. The presales professional thus understands what the customer needs, develops an initial view of the solution the customer needs, then tailors the product or service of his company to meet what the customer needs, explains (or helps sell) this solution to the customer, helps close the deal or sale and often stays on to ensure that the delivery team or product specialists that follow him provide the intended solution.

Areas of specialty of Presales include:

1. Discovery – a means to uncover details of business problems that the prospect has. The presales person will understand and closely analyse the prospects requirements.
2. Preparation – tailoring a prospect specific presentation or software presentation that precisely meets the needs of the prospect.
3. Demonstration – A demonstration of the vendor product that specifically addresses the prospects business problems. It will be done in a manner that highlights an easy method to solve those problems using the tools available within the vendors suite of product.
4. Request for Proposal (RFP) – presales have a detailed knowledge of the product suite, in addition to its application to business problems. As such, presales are frequently involved in technical details in RFP preparation.
5. Marketing assistance – Typically the marketing department and presales department align closely. Given presales is directly in touch with the market, they can share market feedback with the marketing team. Presales will often create the technical detail for use in marketing collateral.
6. Product management assistance – Presales are able to provide unparalleled market feedback to product managers that can be used to influence or provide feedback on product roadmap items.
7. Proposal assistance – Given presales were involved in the sale since the discovery of the prospect business problems, presales will often complete the business analysis and technical component of a sales proposal.

Other uses of the term

In Canada and the United States real estate properties that are sold before construction or before construction is completed are referred to as Presales. These properties are known as off plan properties in the UK and Australia.

CHECK YOUR PROGRESS

Explain the activities involved in Presales

3.12PURCHASE ORDER

A **purchase order** (**PO**) is a commercial document and first official offer issued by a buyer to a seller, indicating types, quantities, and agreed prices for products or services. It is used to control the purchasing of products and services from external suppliers.

The issue of a purchase order does not initiate a contract. If no prior contract exists, then it is the acceptance of the order by the seller that forms a contract between the buyer and seller. Purchase orders can be an essential part of ERP system orders.

Overview

Companies use purchase orders for several reasons. Purchase orders allow buyers to clearly and explicitly communicate their intentions to sellers. They may also help a purchasing agent to manage incoming orders and pending orders. Sellers are also protected by PO's in case of a buyer's refusal to pay for goods or services.

Purchase orders provide benefits in that they streamline the purchasing process to a standard procedure. Commercial lenders or financial institutions may provide financial assistance on the basis of purchase orders. There are various trade finance facilities that almost every financial institution allows to business people against purchase orders such as:

1. Before shipment credit facility
2. Post shipment credit facility
3. Trade finance facility
4. Foreign bill purchase credit facility
5. Bill retirement credit facility
6. Order Confirmation
7. Followup

The purpose of purchase orders is to procure materials for direct consumption or for stock, procure services, cover customer requirements using external resources, or procure a material that is needed in plants from an internal source (Long distance intra-plant stock transfers). They may also place once only procurement transactions and optimize purchasing by taking full advantage of negotiated conditions or for optimal utilisation of existing transport capacities.

Creating a purchase order is typically the first step of the purchase to pay process in an ERP system. Purchase orders may require a SKU code. Within an ERP system, a purchase order can be created manually, and may require confirmation or changes via editing. Within an ERP system (such as in SAP), manually creating a purchase order within the system may look something like "Logistics -> Materials Management -> Purchasing -> Purchasing Order -> Create" and providing a Transaction Code. This document type will be chosen from the screen. A vendor code lookup may need to be selected for a purchase order steps, as well as things like organization group and company code.

Legal

Although a typical purchase order may not contain contract language (in fact most contain little more than a list of the goods or services the buyer desires to purchase, along with price, payment terms, and shipping instructions), the purchase order is a specially regarded instrument regulated by the Uniform Commercial Code or other similar law which establishes a purchase order as a contract by its nature. Yet despite the nature of the purchase order as a contract, it is common to accompany the acceptance of a purchase order with a legal document such as the terms & conditions of sale, which establish specific or additional legal conditions of the contract.

The US Federal Acquisition Regulation states that purchase orders should generally be issued on a fixed-price basis, but provision is also made for unpriced purchase orders to be issued where "it is impractical to obtain pricing in advance of issuance of the purchase order".

Formats

Electronic purchase orders

Many purchase orders are no longer paper-based, but rather transmitted electronically over the Internet. It is common for electronic purchase orders to be used to buy goods or services of any type online.

There are lots of names/terms for Electronic Purchase Orders. It is sometimes known as: E-Procurement, E-Purchasing, E-Purchase Requisition. These terms are normally all referring to Electronic Purchase Orders.

Purchase Order Request Form

Request Date: | Research to be completed by:

Name:

Email Address:

Phone number:

Departure date:

Return date:

Class of Transport: Please choose...

Accommodation: Please choose...

Destination: Please choose...

Main purpose: Please choose...

Discount Options

	Quantity	Price	Cost
Promotion	0	$ 1	$ 0
Credit Refund	0	$ 1	$ 0
Loyalty	0	$ 1	$ 0
Total Discounts to Apply:			$ 0

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Accommodation Search	0	$ 1	$ 0	Day or Group Tours	0	$ 6	$ 0
Smart Traveller Advice	0	$ 2	$ 0	Concerts or Theatre	0	$ 6	$ 0
Visa Information	0	$ 2	$ 0	Self-Guided Walks	0	$ 7	$ 0
Tourist Hotspots	0	$ 3	$ 0	Music Festivals	0	$ 8	$ 0
Attractions or Landmarks	0	$ 3	$ 0	Sporting Events	0	$ 9	$ 0
Free Things To Do	0	$ 3	$ 0	Maps or Directions	0	$ 9	$ 0
Weather Bureau	0	$ 4	$ 0	Hire Car Search	0	$ 10	$ 0
Bad Weather Options	0	$ 4	$ 0	Fine Dining Reservations	0	$ 12	$ 0
Cheap Local Food	0	$ 4	$ 0	Cruising or Packages	0	$ 15	$ 0
Parks or Libraries	0	$ 4	$ 0	Helicopter Options	0	$ 18	$ 0
Art Galleries or Museums	0	$ 5	$ 0	Valet Bookings / Admin	0	$ 20	$ 0
Shopping or Souvenirs	0	$ 5	$ 0	Set your own price	0	$ 50	$ 0

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Payment Terms: PIA - Payment in advance. All orders are subject to credit approval. For payment options refer to PocketbookTravel.com

* Once you have completed this form, please click the below button to email Pocketbook Travel for validation. Email Form

$ 0

Fig 3.02: Purchase order

Non-electronic purchase orders

The record of purchase order in most business firms are still on paper and thus there is a need for proper purchase order format. Many users wish to have professional formatting for purchase orders for several reasons. A company may wish to have a strong understanding of purchase transactions or to know the basic requirements of purchase order. It may also make it part of business documentation, which makes the process easier while keeping record of all transactions and to have good impression on the client or customer.

CHECK YOUR PROGRESS

Explain the importance of a Purchase order

3.13 AUCTION

An **auction** is a process of buying and selling goods or services by offering them up for bid, taking bids, and then selling the item to the highest bidder. The open ascending price auction is arguably the most common form of auction in use today. Participants bid openly against one another, with each subsequent bid required to be higher than the previous bid. An **auctioneer** may announce prices, bidders may call out their bids themselves (or have a proxy call out a bid on their behalf), or bids may be submitted electronically with the highest current bid publicly displayed. In a Dutch auction, the auctioneer begins with a high asking price for some quantity of like items; the price is lowered until a participant is willing to accept the auctioneer's price for some quantity of the goods in the lot or until the seller's reserve price is met. While auctions are most associated in the public imagination with the sale of antiques, paintings, rare collectibles and expensive wines, auctions are also used for commodities, livestock, radio spectrum and used cars. In economic theory, an auction may refer to any mechanism or set of trading rules for exchange.

History

The word "auction" is derived from the Latin *augeō* which means "I increase" or "I augment". For most of history, auctions have been a relatively uncommon way to negotiate the exchange of goods and commodities. In practice, both haggling and sale by set-price have been significantly more common. Indeed, before the seventeenth century the few auctions that were held were sporadic.

Nonetheless, auctions have a long history, having been recorded as early as 500 B.C. According to Herodotus, in Babylon auctions of women for marriage were held annually. The auctions began with the woman the auctioneer considered to be the most beautiful and progressed to the least. It was considered illegal to allow a daughter to be sold outside of the auction method.

During the Roman Empire, following military victory, Roman soldiers would often drive a spear into the ground around which the spoils of war were left, to be auctioned off. Later slaves, often captured as the "spoils of war", were auctioned in the forum under the sign of the spear, with the proceeds of sale going towards the war effort.

Fig 3.03 : Artemis, Ancient Greek marble sculpture. In 2007, a Roman-era bronze sculpture of "Artemis and the Stag" was sold at Sotheby's in New York for US$28.6 million, by far exceeding its estimates and at the time setting the new record as the most expensive sculpture as well as work from antiquity ever sold at auction.

The Romans also used auctions to liquidate the assets of debtors whose property had been confiscated. For example, Marcus Aurelius sold household furniture to pay off debts, the sales lasting for months. One of the most significant historical auctions occurred in the year 193 A.D. when the entire Roman Empire was put on the auction block by the Praetorian Guard. On March 23 The Praetorian Guard first killed emperor Pertinax, then offered the empire to the highest bidder. Didius Julianus outbid everyone else for the price of 6,250 drachmas per guard, an act that initiated a brief civil war. Didius was then beheaded two months later when Septimius Severus conquered Rome.

From the end of the Roman Empire to the eighteenth century auctions lost favor in Europe, while they had never been widespread in Asia.

Modern revival

In some parts of England during the seventeenth and eighteenth centuries auction by candle began to be used for the sale of goods and leaseholds. In a candle auction, the end of the auction was signaled by the expiration of a candle flame, which was intended to ensure that no one could know exactly when the auction would end and make a last-second bid. Sometimes, other unpredictable processes, such as a footrace, were used in place of the expiration of a candle. This type of auction was first mentioned in 1641 in the records of the House of Lords. The practice rapidly became popular, and in 1660 Samuel Pepys's diary recorded two occasions when the Admiralty sold surplus ships "by an inch of candle". Pepys also relates a hint from a highly successful bidder, who had observed that, just before expiring, a candle-wick always flares up slightly: on seeing this, he would shout his final - and

winning - bid. The *London Gazette* began reporting on the auctioning of artwork at the coffeehouses and taverns of London in the late 17th century.

Fig 3.04: A Peep at Christies (1796) – caricature of actress Elizabeth Farren and huntsman Lord Derby examining paintings at Christie's, by James Gillray

The first known auction house in the world was Stockholm Auction House, Sweden (*Stockholms Auktionsverk*), founded by Baron Claes Rålamb in 1674. Sotheby's, currently the world's second-largest auction house, was founded in London on 11 March 1744, when Samuel Baker presided over the disposal of "several hundred scarce and valuable" books from the library of an acquaintance. Christie's, now the world's largest auction house, was founded by James Christie in 1766 in London and published its first auction catalog in 1766, although newspaper advertisements of Christie's sales dating from 1759 have been found.

Other early auction houses that are still in operation include Dorotheum (1707), Mallams (1788), Bonhams (1793), Phillips de Pury & Company (1796), Freeman's (1805) and Lyon & Turnbull (1826). By the end of the 18th century, auctions of art works were commonly held in taverns and coffeehouses. These auctions were held daily, and auction catalogs were printed to announce available items. In some cases these catalogs were elaborate works of art themselves, containing considerable

detail about the items being auctioned. At this time, Christie's established a reputation as a leading auction house, taking advantage of London's status as the major centre of the international art trade after the French Revolution.

Fig 3.05: The Microcosm of London (1808), an engraving of Christie's auction room

During the American civil war goods seized by armies were sold at auction by the Colonel of the division. Thus, some of today's auctioneers in the U.S. carry the unofficial title of "colonel".

The development of the internet, however, has led to a significant rise in the use of auctions as auctioneers can solicit bids via the internet from a wide range of buyers in a much wider range of commodities than was previously practical.

In 2008, the National Auctioneers Association reported that the gross revenue of the auction industry for that year was approximately $268.4 billion, with the fastest growing sectors being agricultural, machinery, and equipment auctions and residential real estate auctions.

Types

Primary

There are traditionally four types of auction that are used for the allocation of a single item:

English auction, also known as an *open ascending price auction*. This type of auction is arguably the most common form of auction in use today. Participants bid openly against one another, with each subsequent bid required to be higher than the previous bid. An auctioneer may announce prices, bidders may call out their bids themselves (or have a proxy call out a bid on their behalf), or bids may be submitted electronically with the highest current bid publicly displayed. In some cases a maximum

bid might be left with the auctioneer, who may bid on behalf of the bidder according to the bidder's instructions.

Fig 3.06: Tuna auction at the Tsukiji fish market in Tokyo

Fig 3.07: Fish auction in Honolulu, Hawaii

- The auction ends when no participant is willing to bid further, at which point the highest bidder pays their bid. Alternatively, if the seller has set a minimum sale price in advance (the 'reserve' price) and the final bid does not reach that price the item remains unsold. Sometimes the auctioneer sets a minimum amount by which the next bid must exceed the current highest bid. The most significant distinguishing factor of this auction type is that the current highest bid is always available to potential bidders. The English auction is commonly used for selling goods, most prominently antiques and artwork, but also secondhand goods and real estate.
- **Dutch auction** also known as an *open descending price auction*. In the traditional Dutch auction the auctioneer begins with a high asking price for some quantity of like items; the price is lowered until a participant is willing to accept the auctioneer's price for some quantity of the goods in the lot or until the seller's reserve price is met. If the first bidder does not purchase the entire lot, the auctioneer continues lowering the price until all of the items have been bid for or the reserve price is reached. Items are allocated based on bid order; the highest bidder selects their item(s) first followed by the second highest bidder, etc. In a modification, all of the winning participants pay only the last announced price for the items that they bid on. The Dutch auction is named for its best known example, the Dutch tulip auctions. ("Dutch auction" is also sometimes used to describe online auctions where several identical goods are sold simultaneously to an equal number of high bidders.) In addition to cut flower sales in the Netherlands, Dutch auctions have also been used for perishable commodities such as fish and tobacco. The Dutch auction is not widely used.
- **Sealed first-price auction** or **blind auction**, also known as a **first-price sealed-bid auction** (FPSB). In this type of auction all bidders simultaneously submit sealed bids so that no bidder knows the bid of any other participant. The highest bidder pays the price they submitted. This type of auction is distinct from the English auction, in that bidders can only submit one bid each. Furthermore, as bidders cannot see the bids of other participants they cannot adjust their own bids accordingly. From the theoretical perspective, this kind of bid process has been argued to be strategically equivalent to the Dutch auction. However, empirical evidence from laboratory experiments has shown that Dutch auctions with high clock speeds yield lower prices than FPSB auctions. What are effectively sealed first-price auctions are commonly called *tendering* for procurement by companies and organisations, particularly for government contracts and auctions for mining leases.
- **Vickrey auction**, also known as a *sealed-bid second-price auction*. This is identical to the sealed first-price auction except that the winning bidder pays the second-highest bid rather than his or her own. Vickrey auctions are extremely important in auction theory, and commonly used in automated contexts such as real-time bidding for online advertising, but rarely in non-automated contexts.

Secondary

Most auction theory revolves around these four "standard" auction types. However, many other types of auctions exist, generally sharing many, including:

- **Multiunit auctions** sell more than one identical item at the same time, rather than having separate auctions for each. This type can be further classified as either a uniform price auction or a discriminatory price auction.
- **All-pay auction** is an auction in which all bidders must pay their bids regardless of whether they win. The highest bidder wins the item. All-pay auctions are primarily of academic interest, and may be used to model lobbying or bribery (bids are political contributions) or competitions such as a running race.
- **Auction by the candle**. A type of auction, used in England for selling ships, in which the highest bid laid on the table by the time a burning candle goes out wins.
- **Bidding fee auction**, also known as a penny auction, often requires that each participant must pay a fixed price to place each bid, typically one penny (hence the name) higher than the

current bid. When an auction's time expires, the highest bidder wins the item and must pay a final bid price. Unlike in a conventional auction, the final price is typically much lower than the value of the item, but all bidders (not just the winner) will have paid for each bid placed; the winner will buy the item at a very low price (plus price of rights-to-bid used), all the losers will have paid, and the seller will typically receive significantly more than the value of the item.

- **Buyout auction** is an auction with an additional set price (the 'buyout' price) that any bidder can accept at any time during the auction, thereby immediately ending the auction and winning the item. If no bidder chooses to utilize the buyout option before the end of bidding the highest bidder wins and pays their bid. Buyout options can be either *temporary* or *permanent*. In a temporary-buyout auction the option to buy out the auction is not available after the first bid is placed. In a permanent-buyout auction the buyout option remains available throughout the entire auction until the close of bidding. The buyout price can either remain the same throughout the entire auction, or vary throughout according to rules or simply as decided by the seller.
- **Combinatorial auction** is any auction for the simultaneous sale of more than one item where bidders can place bids on an "all-or-nothing" basis on "packages" rather than just individual items. That is, a bidder can specify that he or she will pay for items A and B, but only if he or she gets *both*. In combinatorial auctions, determining the winning bidder(s) can be a complex process where even the bidder with the highest individual bid is not guaranteed to win. For example, in an auction with four items (W, X, Y and Z), if Bidder A offers $50 for items W & Y, Bidder B offers $30 for items W & X, Bidder C offers $5 for items X & Z and Bidder D offers $30 for items Y & Z, the winners will be Bidders B & D while Bidder A misses out because the *combined* bids of Bidders B & D is higher ($60) than for Bidders A and C ($55).
- **Generalized second-price auction** and **Generalized first-price auction**
- **Unique bid auctions**
- Many homogenous item auctions, e.g., spectrum auctions
- **Japanese auction** is a variation of the English auction. When the bidding starts no new bidders can join, and each bidder must continue to bid each round or drop out. It has similarities to the ante in Poker.
- **Lloyd's syndicate auction**.
- **Mystery auction** is a type of auction where bidders bid for boxes or envelopes containing unspecified or underspecified items, usually on the hope that the items will be humorous, interesting, or valuable. In the early days of eBay's popularity, sellers began promoting boxes or packages of random and usually low-value items not worth selling by themselves.
- **No-reserve auction** (NR), also known as an *absolute auction*, is an auction in which the item for sale will be sold regardless of price. From the seller's perspective, advertising an auction as having no reserve price can be desirable because it potentially attracts a greater number of bidders due to the possibility of a bargain. If more bidders attend the auction, a higher price might ultimately be achieved because of heightened competition from bidders. This contrasts with a *reserve auction*, where the item for sale may not be sold if the final bid is not high enough to satisfy the seller. In practice, an auction advertised as "absolute" or "no-reserve" may nonetheless still not sell to the highest bidder on the day, for example, if the seller withdraws the item from the auction or extends the auction period indefinitely, although these practices may be restricted by law in some jurisdictions or under the terms of sale available from the auctioneer.
- **Reserve auction** is an auction where the item for sale may not be sold if the final bid is not high enough to satisfy the seller; that is, the seller *reserves* the right to accept or reject the highest bid. In these cases a set 'reserve' price known to the auctioneer, but not necessarily to the bidders, may have been set, below which the item may not be sold. The reserve price may be *fixed* or *discretionary*. In the latter case, the decision to accept a bid is deferred to the auctioneer, who may accept a bid that is marginally below it. A reserve auction is safer for the

seller than a no-reserve auction as they are not required to accept a low bid, but this could result in a lower final price if less interest is generated in the sale.

- **Reverse auction** is a type of auction in which the roles of the buyer and the seller are reversed, with the primary objective to drive purchase prices downward. While ordinary auctions provide suppliers the opportunity to find the best price among interested buyers, reverse auctions give buyers a chance to find the lowest-price supplier. During a reverse auction, suppliers may submit multiple offers, usually as a response to competing suppliers' offers, bidding down the price of a good or service to the lowest price they are willing to receive. By revealing the competing bids in real time to every participating supplier, reverse auctions promote "information transparency". This, coupled with the dynamic bidding process, improves the chances of reaching the fair market value of the item. The reverse auction is widely used by corporations, state and local Governments, and other organizations. The uses are vast and include services as well as goods.
- **Senior auction** is a variation on the all-pay auction, and has a defined loser in addition to the winner. The top two bidders must pay their full final bid amounts, and only the highest wins the auction. The intent is to make the high bidders bid above their upper limits. In the final rounds of bidding, when the current losing party has hit their maximum bid, they are encouraged to bid over their maximum (seen as a small loss) to avoid losing their maximum bid with no return (a very large loss).
- **Silent auction** is a variant of the English auction in which bids are written on a sheet of paper. At the predetermined end of the auction, the highest listed bidder wins the item. This auction is often used in charity events, with many items auctioned simultaneously and "closed" at a common finish time. The auction is "silent" in that there is no auctioneer selling individual items, the bidders writing their bids on a bidding sheet often left on a table near the item. At charity auctions, bid sheets usually have a fixed starting amount, predetermined bid increments, and a "guaranteed bid" amount which works the same as a "buy now" amount. Other variations of this type of auction may include sealed bids. The highest bidder pays the price he or she submitted.
- **Top-up auction** is a variation on the all-pay auction, primarily used for charity events. Losing bidders must pay the difference between their bid and the next lowest bid. The winning bidder pays the amount bid for the item, without top-up.
- **Walrasian auction** or *Walrasian tâtonnement* is an auction in which the auctioneer takes bids from both buyers and sellers in a market of multiple goods. The auctioneer progressively either raises or drops the current proposed price depending on the bids of both buyers and sellers, the auction concluding when supply and demand exactly balance. As a high price tends to dampen demand while a low price tends to increase demand, in theory there is a particular price somewhere in the middle where supply and demand will match.
- **Amsterdam auctions**, a type of premium auction which begins as an English auction. Once only two bidders remain, each submits a sealed bid. The higher bidder wins, paying either the first or second price. Both finalists receive a premium: a proportion of the excess of the second price over the third price (at which English auction ended).
- **Other auctions**: Other auction types also exist, such as Simultaneous Ascending Auction Anglo-Dutch auction, Private value auction, Common value auction

Genres

The range of auctions that take place is extremely wide and one can buy almost anything, from a house to an endowment policy and everything in-between. Some of the recent developments have been the use of the Internet both as a means of disseminating information about various auctions and as a vehicle for hosting auctions themselves.

Here is a short description of the most common types of auction.

- **Government, bankruptcy and general auctions** are amongst the most common auctions to be found today. A government auction is simply an auction held on behalf of a government body generally at a general sale. Here one may find a vast range of materials that have to be sold by various government bodies, for example: HM Customs & Excise, the Official Receiver, the Ministry of Defence, local councils and authorities, liquidators, as well as material put up for auction by companies and members of the public. Also in this group you will find auctions ordered by executors who are entering the assets of individuals who have perhaps died in testate (those who have died without leaving a will), or in debt. One of the most interesting bodies to look out for at auction is HM Customs & Excise who may be entering at auction various items seized from smugglers, fraudsters and racketeers.
- **Motor vehicle and car auctions** – Here one can buy anything from an accident-damaged car to a brand new top-of-the-range model; from a run-of-the-mill family saloon to a rare collector's item.
- **Police auctions** are generally held at general auctions although some forces use online sites including eBay to dispose of lost and found and seized goods.
- **Land and property auctions** – Here one can buy anything from an ancient castle to a brand new commercial premises.
- **Antiques and collectibles auctions** hold the opportunity for viewing a huge array of items.
- **Internet auctions** – With a potential audience of millions the Internet is the most exciting part of the auction world at the moment. Led by sites in the United States but closely followed by UK auction houses, specialist Internet auctions are springing up all over the place, selling everything from antiques and collectibles to holidays, air travel, brand new computers, and household equipment.
- **Titles** – One can buy a manorial title at auction. Every year several of these specialist auctions take place. However, it is important to note that manorial titles are not the same thing as peerages, and have been described as "meaningless" in the modern world.
- **Insurance policies** – Auctions are held for second-hand endowment policies. The attraction is that someone else has already paid substantially to set up the policy in the first place, and one will be able (with the help of a financial calculator) to calculate its real worth and decide whether it is worth taking on.
- **On-site auctions** – Sometimes when the stock or assets of a company are simply too vast or too bulky for an auction house to transport to their own premises and store, they will hold an auction within the confines of the bankrupt company itself. Bidders could find themselves bidding for items which are still plugged in, and the great advantage of these auctions taking place on the premises is that they have the opportunity to view the goods as they were being used, and may be able to try them out. Bidders can also avoid the possibility of goods being damaged whilst they are being removed as they can do it or at least supervise the activity.
- **Private treaty sales** – Occasionally, when looking at an auction catalogue some of the items have been withdrawn. Usually these goods have been sold by 'private treaty'. This means that the goods have already been sold off, usually to a trader or dealer on a private, behind-the-scenes basis before they have had a chance to be offered at the auction sale. These goods are rarely in single lots – photocopiers or fax machines would generally be sold in bulk lots.
- **Charity auctions** - Used by nonprofits, higher education, and religious institutions as a method to raise funds for a specific mission or cause both through the act of bidding itself, and by encouraging participants to support the cause and make personal donations. Often, these auctions are linked with another charity event like a benefit concert.

Time requirements

Each type of auction has its specific qualities such as pricing accuracy and time required for preparing and conducting the auction. The number of simultaneous bidders is of critical importance. Open bidding during an extended period of time with many bidders will result in a final bid that is very

close to the true market value. Where there are few bidders and each bidder is allowed only one bid, time is saved, but the winning bid may not reflect the true market value with any degree of accuracy. Of special interest and importance during the actual auction is the time elapsed from the moment that the first bid is revealed to the moment that the final (winning) bid has become a binding agreement.

Characteristics

Auctions can differ in the number of participants:

- In a *supply* (or *reverse*) auction, *m* sellers offer a good that a buyer requests
- In a *demand* auction, *n* buyers bid for a good being sold
- In a *double* auction *n* buyers bid to buy goods from *m* sellers

Prices are *bid* by buyers and *asked* (or *offered*) by sellers. Auctions may also differ by the procedure for bidding (or asking, as the case may be):

- In an *open* auction participants may repeatedly bid and are aware of each other's previous bids.
- In a *closed* auction buyers and/or sellers submit sealed bids

Auctions may differ as to the price at which the item is sold, whether the first (best) price, the second price, the first *unique* price or some other. Auctions may set a reservation price which is the least/maximum acceptable price for which a good may be sold/bought.

Without modification, *auction* generally refers to an open, demand auction, with or without a *reservation price* (or *reserve*), with the item sold to the highest bidder.

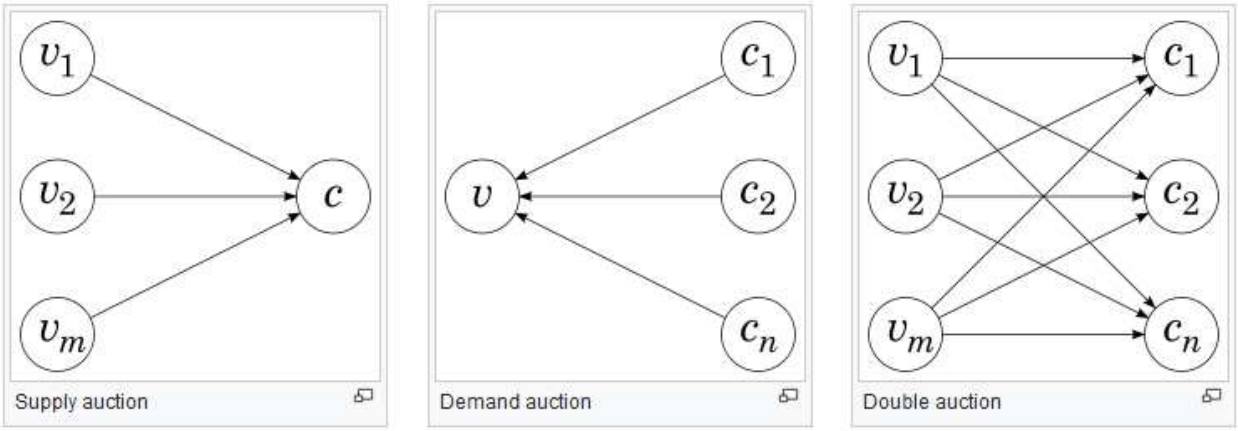

Fig 3.08: (a)Supply auction,(b) Demand auction, (c)Double auction

Common uses

Auctions are publicly and privately seen in several contexts and almost anything can be sold at auction. Some typical auction arenas include the following:

Fig 3.09: Farm clearing sale, Woolbrook, NSW

Fig 3.10: Grass-fed cattle at auction, Walcha, NSW

Fig 3.11: Wool buyers' room at a wool auction, Newcastle, NSW

- The antique business, where besides being an opportunity for trade they also serve as social occasions and entertainment
- In the sale of collectibles such as stamps, coins, vintage toys & trains, classic cars, fine art and luxury real estate
- The wine auction business, where serious collectors can gain access to rare bottles and mature vintages, not typically available through retail channels
- In the sale of all types of real property including residential and commercial real estate, farms, vacant lots and land; this is the method used on tax sales.
- For the sale of consumer second-hand goods of all kinds, particularly farm (equipment) and house clearances and online auctions.
- Sale of industrial machinery, both surplus or through insolvency.
- In commodities auctions, like the fish wholesale auctions
- In livestock auctions where sheep, cattle, pigs and other livestock are sold. Sometimes very large numbers of stock are auctioned, such as the regular sales of 50,000 or more sheep during a day in New South Wales.
- In wool auctions where international agents purchase lots of wool
- Thoroughbred horses, where yearling horses and other bloodstock are auctioned.
- In legal contexts where forced auctions occur, as when one's farm or house is sold at auction on the courthouse steps. (Property seized for non-payment of property taxes, or under foreclosure, is sold in this manner.)
- Travel tickets. One example is SJ AB in Sweden auctioning surplus at Tradera (Swedish eBay).
- Holidays. A variety of holidays are available for sale online particularly via eBay. Vacation rentals appear to be most common. Many holiday auction websites have launched but failed.
- Self storage units. In certain jurisdictions, if a storage facility's tenant fails to pay his/her rent, the contents of his/her locker(s) may be sold at a public auction. Several television shows focus on such auctions, including *Storage Wars* and *Auction Hunters*.

Although less publicly visible, the most economically important auctions are the commodities auctions in which the bidders are businesses even up to corporation level. Examples of this type of auction include:

- Sales of businesses
- Spectrum auctions, in which companies purchase licenses to use portions of the electromagnetic spectrum for communications (e.g., mobile phone networks)
- Private electronic markets using combinatorial auction techniques to continuously sell commodities (coal, iron ore, grain, water...) to a pre-qualified group of buyers (based on price and non-price factors)
- Timber auctions, in which companies purchase licenses to log on government land
- Timber allocation auctions, in which companies purchase timber directly from the government Forest Auctions
- Electricity auctions, in which large-scale generators and consumers of electricity bid on generating contracts
- Environmental auctions, in which companies bid for licenses to avoid being required to decrease their environmental impact. These include auctions in emissions trading schemes.
- Debt auctions, in which governments sell debt instruments, such as bonds, to investors. The auction is usually sealed and the uniform price paid by the investors is typically the best non-winning bid. In most cases, investors can also place so called *non-competitive bids*, which indicates an interest to purchase the debt instrument at the resulting price, whatever it may be
- Auto auctions, in which car dealers purchase used vehicles to retail to the public.
- Produce auctions, in which produce growers have a link to localized wholesale buyers (buyers who are interested in acquiring large quantities of locally grown produce).

Bidding strategy

Fig 3.12: An 18th century Chinese meiping porcelain vase. Porcelain has long been a staple at art sales. In 2005, a 14th-century Chinese porcelain piece was sold by the Christie's for £16 million, or US$28 million. It set a world auction record for any ceramic work of art.

Katehakis and Puranam provided the first model for the problem of optimal bidding for a firm that in each period procures items to meet a random demand by participating in a finite sequence of auctions. In this model an item valuation derives from the sale of the acquired items via their demand distribution, sale price, acquisition cost, salvage value and lost sales. They established monotonicity properties for the value function and the optimal dynamic bid policy. They also provided a model for the case in which the buyer must acquire a fixed number of items either at a fixed buy-it-now price in the open market or by participating in a sequence of auctions. The objective of the buyer is to minimize his expected total cost for acquiring the fixed number of items.

Bid shading

Bid shading is placing a bid which is below the bidder's actual value for the item. Such a strategy risks losing the auction, but has the possibility of winning at a low price. Bid shading can also be a strategy to avoid the Winner's curse.

Chandelier or rafter bidding

This is the practice, especially by high-end art auctioneers, of raising false bids at crucial times in the bidding in order to create the appearance of greater demand or to extend bidding momentum for a work on offer. To call out these nonexistent bids auctioneers might fix their gaze at a point in the auction room that is difficult for the audience to pin down. The practice is frowned upon in the industry. In the United States, chandelier bidding is not illegal. In fact, an auctioneer may bid up the price of an item to the reserve price, which is an unstated amount the consignor will not sell the item for. However, the auction house is required to disclose this information.

In the United Kingdom this practice is legal on property auctions up to but not including the reserve price, and is also known as off-the-wall bidding.

Collusion

Whenever bidders at an auction are aware of the identity of the other bidders there is a risk that they will form a "ring" or "pool" and thus manipulate the auction result, a practice known as collusion. By agreeing to bid only against outsiders, never against members of the "ring", competition becomes weaker, which may dramatically affect the final price level. After the end of the official auction an unofficial auction may take place among the "ring" members. The difference in price between the two auctions could then be split among the members. This form of a ring was used as a central plot device in the opening episode of the 1979 British television series *The House of Caradus*, 'For Love or Money', uncovered by Helena Caradus on her return from Paris.

A ring can also be used to increase the price of an auction lot, in which the owner of the object being auctioned may increase competition by taking part in the bidding him or herself, but drop out of the bidding just before the final bid. In Britain and many other countries, rings and other forms of bidding on one's own object are illegal. This form of a ring was used as a central plot device in an episode of the British television series Lovejoy (series 4, episode 3), in which the price of a watercolour by the (fictional) Jessie Webb is inflated so that others by the same artist could be sold for more than their purchase price.

In an English auction, a dummy bid is a bid made by a dummy bidder acting in collusion with the auctioneer or vendor, designed to deceive genuine bidders into paying more. In a first-price auction, a dummy bid is an unfavourable bid designed so as not to become the winning bid. (The bidder does not want to win this auction, but he or she wants to make sure to be invited to the next auction).

In Australia, a dummy bid (shill, schill) is a criminal offence, but a vendor bid or a co-owner bid below the reserve price is permitted, if clearly declared as such by the auctioneer. These are all official legal terms in Australia, but may have other meanings elsewhere. A co-owner is one of two or several owners (who disagree among themselves).

In Sweden and many other countries there are no legal restrictions, but it will severely hurt the reputation of an auction house that knowingly permits any other bids except genuine bids. If the reserve is not reached this should be clearly declared.

In South Africa auctioneers can use their staff or any bidder to raise the price as long as its disclosed before the auction sale. The Auction Alliance controversy focused on vendor bidding and it was proven to be legal and acceptable in terms of the South African consumer laws.

Suggested opening bid (SOB)

There will usually be an estimate of what price the lot will fetch. In an ascending open auction it is considered important to get at least a 50-percent increase in the bids from start to finish. To accomplish this, the auctioneer must start the auction by announcing a suggested opening bid (SOB) that is low enough to be immediately accepted by one of the bidders. Once there is an opening bid, there will quickly be several other, higher bids submitted. Experienced auctioneers will often select an SOB that is about 45 percent of the (lowest) estimate. Thus there is a certain margin of safety to ensure that there will indeed be a lively auction with many bids submitted. Several observations indicate that the lower the SOB, the higher the final winning bid. This is due to the increase in the number of bidders attracted by the low SOB.

A chi-squared distribution shows many low bids but few high bids. Bids "show up together"; without several low bids there will not be any high bids.

Another approach to choosing an SOB: The auctioneer may achieve good success by asking the expected final sales price for the item, as this method suggests to the potential buyers the item's particular value. For instance, say an auctioneer is about to sell a $1,000 car at a sale. Instead of asking $100, hoping to entice wide interest (for who wouldn't want a $1,000 car for $100?), the auctioneer may suggest an opening bid of $1,000; although the first bidder may begin bidding at a mere $100, the final bid may more likely approach $1,000.

Terminology

- Appraisal – an estimate of an item's worth, usually performed by an expert in that particular field.
- Auction block - a raised platform on which the auctioneer shows the items to be auctioned; can also be slang for the auction itself.
- Auction chant - a rhythmic repetition of numbers and "filler words" spoken by an auctioneer in the process of conducting an auction.
- Auction fever - an emotional state elicited in the course of one or more auctions that causes a bidder to deviate from an initially chosen bidding strategy.

Fig 3.13: Duo Yun Xuan auction house in Malacca, Malaysia

- Auction house - the company operating the auction (i.e., establishing the date and time of the auction, the auction rules, determining which item(s) are to be included in the auction, registering bidders, taking payments, and delivering the goods to the winning bidders).
- Auctioneer - the person conducting the actual auction. They announce the rules of the auction and the item(s) being auctioned, call and acknowledging bids made, and announce the winner. They generally will call the auction using auction chant.
    - The auctioneer may operate his/her own auction house (and thus perform the duties of both auctioneer and auction house), and/or work for another house.
    - Auctioneers are frequently regulated by governmental entities, and in those jurisdictions must meet certain criteria to be licensed (be of a certain age, have no disqualifying criminal record, attend auction school, pass an examination, and pay a licensing fee).
    - Auctioneers may or may not (depending on the laws of the jurisdiction and/or the policies of the auction house) bid for their own account, or if they do must disclose this to bidders at the auction; similar rules may apply for employees of the auctioneer or the auction house.
- Bidding - the act of participating in an auction by offering to purchase an item for sale.
- Buyer's premium – a fee paid by the buyer to the auction house; it is typically calculated as a percentage of the winning bid and added on it. Depending on the jurisdiction the buyer's premium, in addition to the sales price, may be subject to VAT or sales tax.
- Buyout price – A price that, if accepted by a bidder, immediately ends the auction and awards the item to him/her (an example is eBay's BuyItNow feature).
- "Choice" - a form of bidding whereby a number of identical or similar items are bid at a single price ***for each item***.
    - "Choice" differs from "lot" in that the winning bidder must take at least one of the items, and can take more than one (up to and including all of them) but is not required to do so.

    - If the bidder takes more than one item, the price paid is "times the money" (see below).
    - Items not selected by the winning bidder may then be reauctioned to other bidders.
        - Example: An auction has five bath fragrance gift baskets where bidding is "choice", and the hammer price is USD $5. The winner must choose at least one basket, but can choose two, three, four, or all five baskets. If the winner chooses to take three baskets, s/he must pay $15 (three baskets @ $5 each). The other two baskets may then be reauctioned.
- Clearance rate – The percentage of items that sell over the course of the auction.
- Commission – a fee paid by a consignor/seller to the auction house; it is typically calculated as a percentage of the winning bid and deducted from the gross proceeds due to the consignor/seller.
- Consignee and consignor - as pertaining to auctions, the consignor (also called the seller, and in some contexts the vendor) is the person owning the item to be auctioned or the owner's representative, while the consignee is the auction house. The consignor maintains title until such time that an item is purchased by a bidder and the bidder pays the auction house.
- Dummy bid (a/k/a "ghost bid") - a false bid, made by someone in collusion with the seller or auctioneer, designed to create a sense of increased interest in the item (and, thus, increased bids).
- Dynamic closing - a mechanism used to prevent auction sniping, by which the closing time is extended for a small period to allow other bidders to increase their bids.
- eBidding – electronic bidding, whereby a person may make a bid without being physically present at an auction (or where the entire auction is taking place on the Internet).
- Earnest money deposit (a/k/a "caution money deposit" or "registration deposit") – a payment that must be made by prospective bidders ahead of time in order to participate in an auction.
    - The purpose of this deposit is to deter non-serious bidders from attending the auction; by requiring the deposit, only bidders with a genuine interest in the item(s) being sold will participate.
    - This type of deposit is most often used in auctions involving high-value goods (such as real estate).
    - The winning bidder has his/her earnest money applied toward the final selling price; the non-winners have theirs refunded to them.
- Escrow – an arrangement in which the winning bidder pays the amount of his/her bid to a third party, who in turn releases the funds to the seller under agreed-upon terms.
- Hammer price – the nominal price at which a lot is sold; the winner is responsible for paying any additional fees and taxes on top of this amount.
- Increment – a minimum amount by which a new bid must exceed the previous bid. An auctioneer may decrease the increment when it appears that bidding on an item may stop, so as to get a higher hammer price. Alternatively, a participant may offer a bid at a smaller increment, which the auctioneer has the discretion to accept or reject.
- Lot – either a single item being sold, or a group of items (which may or may not be similar or identical, such as a "job lot" of manufactured goods) that are bid on as one unit.
    - If the lot is for a group of items, the price paid is for the entire lot and the winning bidder must take all the items sold.
    - Variants on a group lot bid include "choice" and "times the money" (see definitions for each).
        - Example: An auction has five bath fragrance gift baskets where bidding is "lot", and the hammer price is USD $5. The winner must pay $5 (as the price is for the whole lot) and must take all five baskets.
- Minimum bid – The smallest opening bid that will be accepted.
    - A minimum bid can be as little as USD$0.01 (one cent) depending on the auction.
    - If no one bids at the initial minimum bid, the auctioneer may lower the minimum bid so as to create interest in the item.

    - The minimum bid differs from a reserve price (see definition), in that the auctioneer sets the minimum bid, while the seller sets the reserve price (if desired).
- "New money" - a new bidder, joining bidding for an item after others have bid against each other.
- No reserve auction (a/k/a "absolute auction") – an auction in which there is no minimum acceptable price; so long as the winning bid is at least the minimum bid, the seller must honor the sale.
- Outbid (also spelled "out-bid" or "out bid") – to bid higher than another bidder.
- Opening bid – the first bid placed on a particular lot. The opening bid must be at least the minimum bid, but may be higher (e.g., a bidder may shout out a considerably larger bid than minimum, to discourage other bidders from bidding).
- Paddle - a numbered instrument used to place a bid
- Protecting a Market - when a dealer places a bid on behalf of an artist he or she represents or otherwise has a financial interest in ensuring a high price. Artists represented by major galleries typically expect this kind of protection from their dealers.
- Proxy bid (a/k/a "absentee bid") – a bid placed by an authorized representative of a bidder who is not physically present at the auction.
    - Proxy bids are common in auctions of high-end items, such as art sales (where the proxy represents either a private bidder who does not want to be disclosed to the public, or a museum bidding on a particular item for its collection).
    - If the proxy is outbid on an item during the auction, the proxy (depending on the instructions of the bidder) may either increase the bid (up to a set amount established by the bidder) or be required to drop out of the bidding for that item.
    - A proxy may also be limited by the bidder in the total amount to spend on items in a multi-item auction.
- Relisting - re-selling an item that has already been sold at auction, but where the buyer did not take possession of the item (for example, in a real estate auction, the buyer did not provide payment by the closing date).
- Reserve price – A minimum acceptable price established by the seller prior to the auction, which may or may not be disclosed to the bidders.
    - If the winning bid is below the reserve price, the seller has the right to reject the bid and withdraw the item(s) being auctioned.
    - The reserve price differs from a minimum bid (see definition), in that the seller sets the reserve price (if desired), while the auctioneer sets the minimum bid.
- Sealed bid - a submitted bid whose value is unknown to competitors.
- Sniping – the act of placing a bid just before the end of a timed auction, thus giving other bidders no time to enter new bids.
- Specialist - on-staff trained professionals who put together the auction
- The "three Ds" death, divorce, or debt - sometimes a reason for an item to be sold at an auction
- "Times the money" - a form of bidding similar to "choice", whereby the bid price is ***per item***, but where the winning bidder must take ***all*** of the items offered for sale.
    - The price paid in a "times the money" bid is the bid price multiplied by the number of items, plus buyer's premium and any applicable taxes.
    - "Times the money" differs from "lot" in that the price is ***per item***, not one price for all of the items as a group.
        - Example: An auction has five bath fragrance gift baskets where bidding is "times the money", and the hammer price is USD $5. The winner must pay $25 (five baskets @ $5 each) and must take all five baskets.
- Vendor bid - a bid by the person selling the item. The bid is sometimes a dummy bid (see definition) but not always.
- White Glove Sale - an auction in which every single lot is sold.

CHECK YOUR PROGRESS

Explain the salient features of Auction

Give a detailed account of three types of auctions.

3.14 REVERSE AUCTION

A **reverse auction** is a type of auction in which the roles of buyer and seller are reversed. In an ordinary auction (also known as a 'forward auction'), buyers compete to obtain goods or services by offering increasingly higher prices. In a reverse auction, the sellers compete to obtain business from the buyer and prices will typically decrease as the sellers underbid each other.

A reverse auction is similar to a unique bid auction as the basic principle remains the same; however, a unique bid auction follows the traditional auction format more closely as each bid is kept confidential and one clear winner is defined after the auction finishes.

For business auctions, the term refers to a specific type of auction process (also called **procurement auction**, **e-auction**, **sourcing event**, **e-sourcing** or **eRA**, **eRFP**, **e-RFO**, **e-procurement**, **B2B Auction**) commonly used in government procurement and the private sector .

For consumer auctions, the term is often used to refer to a sales processes that shares some characteristics with auctions, but are not necessarily auctions in the traditional sense.

Context

The most common application of reverse auctions is for e-procurement, a strategy used by purchasing as part of strategic sourcing and other supply management activities. It enables suppliers to compete on-line in real time and is changing the way firms and their consortia select and behave with their suppliers worldwide. It improves effectiveness of the sourcing process and facilitate access to new suppliers. This may in the future lead to a standardization of sourcing procedures, reduced order cycle, which can enable businesses to reduce prices and generally provide a higher level of service.

In a typical auction, the seller offers an item which she wishes to sell. Potential buyers are then free to bid on the item until the time period expires. The buyer with the highest offer wins the right to purchase the item for the price determined at the end of the auction.

A reverse auction is different in that a single buyer offers a contract out for bidding (by either using specialized software or through an on-line marketplace). Multiple sellers are then able to offer bids on the contract. As the auction progresses, the price decreases as sellers compete to offer lower bids than their competitors whilst still meeting all of the specifications of the original contract.

Bidding performed in real-time via the Internet results in a dynamic, competitive process. This helps achieve rapid downward price pressure that is not normally attainable using traditional static paper-based bidding processes. Many reverse auction software companies or service providers report an average price reduction of 18–20 percent following the initial auction's completion.

The buyer may award the contract to the seller who bid the lowest price. Or, a buyer may award contracts to suppliers who bid higher prices depending on the buyer's specific needs with regard to quality, lead-time, capacity, or other value-adding capabilities.

The use of optimization software has become popular since 2002 to help buyers determine which supplier is likely to provide the best value in providing goods or services. The software includes relevant buyer and seller business data, including constraints.

Reverse auctions are used to fill both large and small value contracts for both public sector and private commercial organizations. In addition to items traditionally thought of as commodities, reverse auctions are also used to source buyer-designed goods and services; and they have even been used to source reverse auction providers. The first time this occurred was in August 2001, when America West Airlines (now US Airways) used FreeMarkets software and awarded the contract to MaterialNet.

One of form reverse auction is static auction (RFQ or tender). Static auction is alternative to dynamic auction and regular negotiation process in commerce especially on B2B electronic marketplace.

In 2003, researchers claimed an average of five percent of total corporate spending was sourced using reverse auctions. They have been found to be more appropriate and suitable in industries and sectors like advertising, auto components, bulk chemicals, consumer durables, computers and peripherals, contract manufacturing, courier services, FMCG, healthcare, hospitality, insurance, leasing, logistics, maritime shipping, MRO, retail, software licensing, textiles, tourism, transport and warehousing.

History

The pioneer of online reverse auctions, FreeMarkets, was founded in 1995 by former McKinsey consultant and General Electric executive Glen Meakem after he failed to find internal backing for the idea of a reverse auction division at General Electric. Meakem hired McKinsey colleague Sam Kinney, who developed much of the intellectual property behind FreeMarkets. Headquartered in Pittsburgh, PA, FreeMarkets built teams of "market makers" and "commodity managers" to manage the process of running the online tender process and set up market operations to manage auctions on a global basis.

The company's growth was aided greatly by the hype of the dot-com boom era. FreeMarkets customers included BP plc, United Technologies, Visteon, H.J. Heinz, Phelps Dodge, Exxon Mobil, and Royal Dutch Shell, to name a few. Dozens of competing start-up reverse auction service providers and established companies such as General Motors (an early FreeMarkets customer) and SAP, rushed to join the reverse auction marketspace.

Although FreeMarkets survived the winding down of the dot-com boom, by the early-2000s, it was apparent that its business model was really like an old-economy consulting firm with some sophisticated proprietary software. Online reverse auctions started to become mainstream and the prices that FreeMarkets had commanded for its services dropped significantly. This led to a consolidation of the reverse auction service marketplace. In January 2004, Ariba announced its purchase of FreeMarkets for US$493 million.

Fortune published an article in March 2000, describing the early days of reverse auctions.

In the past few years mobile reverse auction have evolved. Unlike business-to-business (B2B) reverse auctions, mobile reverse auctions are business-to-consumer (B2C) and allow consumers to bid on products for pennies. The lowest unique bid wins.

Very recently business-to-consumer auctions with a twist have started to evolve; they are more similar to the original business-to-business auctions than mobile reverse auctions in that they offer consumers the option of placing a specification before retailers or resellers and allowing them to publicly bid for their business.

In congressional testimony on the 2008 proposed legislative package to use federal funds to buy toxic assets from troubled financial firms, Federal Reserve Chairman Ben Bernanke proposed that a reverse auction could be used to price the assets.

In 2004, the White House Office of Federal Procurement Policy (OFPP) issued a memorandum encouraging increased use of commercially available online procurement tools, including reverse auctions. In 2005, both the Government Accountability Office and Court of Federal Claims upheld the legality of federal agency use of online reverse auctions. In 2008, OFPP issued a government-wide memorandum encouraging agencies to improve and increase competitive procurement and included specific examples of competition best practices, including reverse auctions. In 2010, The White House Office of Management and Budget cited "continued implementation of innovative procurement methods, such as the use of web-based electronic reverse auctions" as one of the contracting reforms helping agencies meet acquisition savings goals.

Spectrum auction

In the United States, the Federal Communications Commission created FCC auction 1001 as a reverse auction in order to get back much of the 600MHz band from television broadcasting. The remaining TV stations would then be repacked onto the lower UHF and even VHF TV channels. After the reverse auction in June 2016, a forward spectrum auction (FCC auction 1002) will then be held, with mostly mobile phone carriers as the buyers.

CHECK YOUR PROGRESS

Explain in details the processes and importance of Reverse auction

3.15 END QUESTIONS

1. Explain the concepts related to Expediting the purchase process
2. Explain the major considerations while arriving at Total cost of acquisition
3. Elaborate the process of Spend analysis
4. What is the importance of Turnkey projects.
5. Explain the major processes in Contract management
6. Describe the concept of Performance-based contracting
7. Explain the importance and purpose of a Rate contract
8. Discuss the processes involved in the Call for bids
9. Explain the main features of Tender notification
10. Explain the activities involved in Presales
11. Explain the importance of a Purchase order
12. Explain the salient features of Auction
13. Give a detailed account of three types of auctions.
14. Explain in details the processes and importance of Reverse auction

3.16 REFERENCES AND FURTHER READING

Wikipeadia (n.d.) entries on

- Expediting
- Total cost of acquisition
- Spend analysis
- Turnkey
- Contract management
- Performance-based contracting
- Rate contract
- Call for bids
- Tender notification
- Presales
- Purchase order
- Auction
- Reverse auction

UNIT 4 FOOD STORAGE AND SAFETY

4.00 INTRODUCTION

Now that I have explained to you the concept of inventory, inventory control, valuation, purchasing, procurement, contract management, and auction, I will focus on what to do with the items which you have procured. Obviously you will store it and consume it. However, storing food items has various issues involved. You have to take proper care that they do not get spoiled. This is the subject matter of the last Unit of this course.

I will help you understand what issues pertain to the storage of food items.

First, we will study the concepts like Food storage. It allows food to be eaten for some time (typically weeks to months) after harvest rather than solely immediately. It is both a traditional domestic skill and, in the form of food logistics, an important industrial and commercial activity. Related to this is the topic of Food safety. It is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness. This includes a number of routines that should be followed to avoid potential health hazards.

If you don't take proper care food gets spoiled. Spoilage is the process in which food deteriorates to the point in which it is not edible to humans or its quality of edibility becomes reduced. Various external forces are responsible for the spoilage of food. Food that is capable of spoiling is referred to as perishable food. The spoilage of meat occurs, if the meat is untreated, in a matter of hours or days and results in the meat becoming unappetizing, poisonous or infectious. Spoilage is caused by the practically unavoidable infection and subsequent decomposition of meat by bacteria and fungi, which are borne by the animal itself, by the people handling the meat, and by their implements. Meat can be kept edible for a much longer time – though not indefinitely – if proper hygiene is observed during production and processing, and if appropriate food safety, food preservation and food storage procedures are applied.

Let us also study various ways to store food items, like larders, pantries and root cellars. A larder is a cool area for storing food prior to use. Larders were commonplace in houses before the widespread use of the refrigerator. A root cellar is a structure, usually underground or partially underground, used for storage of vegetables, fruits, nuts, or other foods. Its name reflects the traditional focus on root crops stored in an underground cellar, which is still often true, although a wide variety of foods can potentially be stored, for weeks to months, depending on the crop and the conditions, and the structure may not always be underground. A pantry is a room where beverages, food, and sometimes dishes, household cleaning chemicals, linens, or provisions are stored. Food and beverage pantries serve in an ancillary capacity to the kitchen.

Thus study of this Unit will help you to take care of the food item which you procured using techniques you studied in earlier Units. You will need to factor the concepts of Food storage, hygiene, safety also when you procure the food. Hence this unit will put our study of inventory, procurement in proper perspective. It will help you become an efficient and effective managing professional in hospitality, catering and tourism.

4.01 UNIT OBJECTIVES

After studying this unit you will be able to:

- Explain the major purposes served by Food storage
- Elaborate on the care to be taken while storing food items like grains, spices and herbs domestically.
- Discuss about care to be taken while freezing and thawing food items.
- Describe what is covered under the study of Food safety.
- Explain the five key principles of food hygiene, according to World Health Organization.
- Explain the issues and concerns in Food Safety.
- Explain the main reasons for Food spoilage
- Elaborate how food spoilage can be prevented.
- Explain the consequences of food spoilage.
- Explain the reasons for Meat spoilage
- Describe the symptoms of microbial spoilage in meat
- List the essential qualities of a Larder
- Descrine a typical larder.
- Describe a Root cellar
- Elaborate on the functions of root cellars.
- Explain how root cellars are constructed.
- Explain the concept of Pantry
- Describe the historic evolution of pantries.
- Discuss the various types of pantries.

4.02 FOOD STORAGE

Food storage allows food to be eaten for some time (typically weeks to months) after harvest rather than solely immediately. It is both a traditional domestic skill and, in the form of **food logistics**, an important industrial and commercial activity. Food preservation, storage, and transport, including timely delivery to consumers, are important to food security, especially for the majority of people throughout the world who rely on others to produce their food. Food is stored by almost every human society and by many animals. Storing of food has several main purposes:

- Storage of harvested and processed plant and animal food products for distribution to consumers
- Enabling a better balanced diet throughout the year
- Reducing kitchen waste by preserving unused or uneaten food for later use
- Preserving pantry food, such as spices or dry ingredients like rice and flour, for eventual use in cooking
- Preparedness for catastrophes, emergencies and periods of food scarcity or famine
- Religious reasons (Example: LDS Church leaders instruct church members to store food)
- Protection from animals or theft

Fig 4.01: U.S. Federal Emergency Management Agency (FEMA) food storage containers stacked on shipping pallets in Texas, 2008.

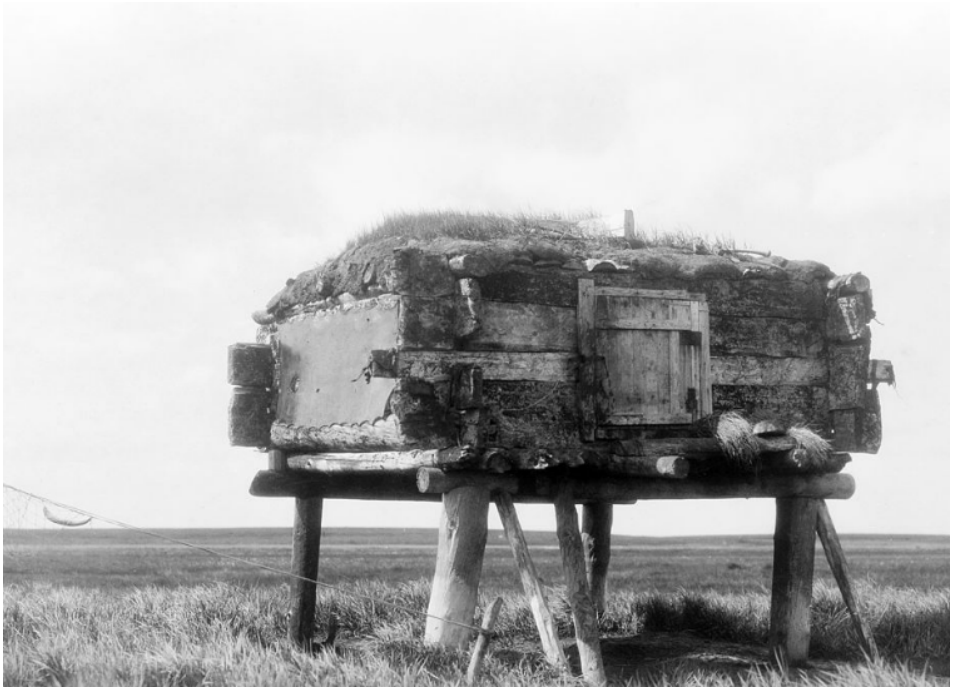

Fig 4.02: Yup'ik elevated food cache (qulvarvik), Hooper Bay, Alaska, 1929. Photograph by Edward S. Curtis

Domestic food storage

Fig 4.03: Tupperware kitchen storage containers designed for a variety of uses.

Fig 4.04: Plastic storage containers can be used to store food.

The safe storage of food for home use should strictly adhere to guidelines set out by reliable sources, such as the United States Department of Agriculture. These guidelines have been thoroughly researched by scientists to determine the best methods for reducing the real threat of food poisoning from unsafe food storage. It is also important to maintain proper kitchen hygiene, to reduce risks of

bacteria or virus growth and food poisoning. The common food poisoning illnesses include Listeriosis, Mycotoxicosis, Salmonellosis, E. coli, Staphylococcal food poisoning and Botulism. There are many other organisms that can also cause food poisoning.

There are also safety guidelines available for the correct methods of home canning of food. For example, there are specific boiling times that apply depending upon whether pressure canning or waterbath canning is being used in the process. These safety guidelines are intended to reduce the growth of mold and bacteria and the threat of potentially-fatal food poisoning.

Food storage safety

Freezers and thawing food

Freezer temperature should be maintained below 0 °F (−18 °C). Food should never be thawed at room temperature, this increases the risk of bacterial and fungal growth and accordingly the risk of food poisoning. Once thawed, food should be used and never refrozen. Frozen food should be thawed using the following methods:

- Microwave oven
- During cooking
- In cold water (place food in watertight, plastic bag; change water every 30 minutes)
- In the refrigerator

Throw out foods that have been warmer than 40 °F (4 °C) for more than 2 hours. If there is any doubt at all about the length of time the food has been defrosted at room temperature, it should be thrown out. Freezing does not destroy microbes present in food. Freezing at 0 °F does inactivate microbes (bacteria, yeasts and molds). However, once food has been thawed, these microbes can again become active. Microbes in thawed food can multiply to levels that can lead to foodborne illness. Thawed food should be handled according to the same guidelines as perishable fresh food.

Food frozen at 0 °F and below is preserved indefinitely. However, the quality of the food will deteriorate if it is frozen over a lengthy period. The United States Department of Agriculture, Food Safety and Inspection Service publishes a chart showing the suggested freezer storage time for common foods.

Refrigeration

It is important to note that safe food storage using refrigeration requires adhering to temperature guidelines:

For safety, it is important to verify the temperature of the refrigerator. Refrigerators should be set to maintain a temperature of 40 °F or below. Some refrigerators have built-in thermometers to measure their internal temperature. For those refrigerators without this feature, keep an appliance thermometer in the refrigerator to monitor the temperature. This can be critical in the event of a power outage. When the power goes back on, if the refrigerator is still 40 °F, the food is safe. Foods held at temperatures above 40 °F for more than 2 hours should not be consumed. Appliance thermometers are specifically designed to provide accuracy at cold temperatures. Be sure refrigerator/freezer doors are closed tightly at all times. Don’t open refrigerator/freezer doors more often than necessary and close them as soon as possible.

Storage times for refrigerated food

The United States Department of Agriculture, Food Safety and Inspection Service publishes recommended storage times for refrigerated food.

Storing oils and fats

Oils and fats can begin to go rancid quickly when not stored safely. Rancid cooking oils and fats do not often smell rancid until well after they have spoiled. Oxygen, light and heat all contribute to cooking oils becoming rancid. The higher the level of polyunsaturated fat that an oil contains, the faster it spoils. The percentage of polyunsaturated fat in some common cooking oils is: safflower (74%); sunflower (66%); corn (60%); soybean (37%); peanut (32%); canola (29%); olive (8%); coconut (5%).

To help preserve oils from rancidification, they should be stored in a dark place, stored in oxygen-safe, light-reducing containers (e.g. dark glass or metal). Once opened, oils should be refrigerated and used within a few weeks, when some types begin to go rancid. Unopened oils can have a storage life of up to one year, but some types have a shorter shelf-life even when unopened (such as sesame and flaxseed).

Dry storage of foods

Further information: Food preservation

Vegetables

Fig 4.05: A large root cellar at the Oxon Hill Manor farm in Maryland

The guidelines vary for safe storage of vegetables under dry conditions (without refrigerating or freezing). This is because different vegetables have different characteristics, for example, tomatoes contain a lot of water, while root vegetables such as carrots and potatoes contain less. These factors, and many others, affect the amount of time that a vegetable can be kept in dry storage, as well as the temperature needed to preserve its usefulness. The following guideline shows the required dry storage conditions:

- Cool and dry: onion
- Cool and moist: root vegetable, potato, cabbage
- Warm and dry: winter squash, pumpkin, sweet potatoes, dried hot peppers

Many cultures have developed innovative ways of preserving vegetables so that they can be stored for several months between harvest seasons. Techniques include pickling, home canning, food dehydration, or storage in a root cellar.

Grain

Grain, which includes dry kitchen ingredients such as flour, rice, millet, couscous, cornmeal, and so on, can be stored in rigid sealed containers to prevent moisture contamination or insect or rodent infestation. For kitchen use, glass containers are the most traditional method. During the 20th century plastic containers were introduced for kitchen use. They are now sold in a vast variety of sizes and designs.

Metal cans are used (in the United States the smallest practical grain storage uses closed-top #10 metal cans). Storage in grain sacks is ineffective; mold and pests destroy a 25 kg cloth sack of grain in a year, even if stored off the ground in a dry area. On the ground or damp concrete, grain can spoil in as little as three days, and the grain might have to be dried before it can be milled. Food stored under unsuitable conditions should not be purchased or used because of risk of spoilage. To test whether grain is still good, it can be sprouted. If it sprouts, it is still good, but if not, it should not be eaten. It may take up to a week for grains to sprout. When in doubt about the safety of the food, throw it out as quickly as possible.

Spices and herbs

Spices and herbs are today often sold prepackaged in a way that is convenient for pantry storage. The packaging has dual purposes of both storing and dispensing the spices or herbs. They are sold in small glass or plastic containers or resealable plastic packaging. When spices or herbs are homegrown or bought in bulk, they can be stored at home in glass or plastic containers. They can be stored for extended periods, in some cases for years. However, after 6 months to a year, spices and herbs will gradually lose their 109pence as oils they contain will slowly evaporate during storage.

Spices and herbs can be preserved in vinegar for short periods of up to a month, creating a flavoured vinegar.

Alternative methods for preserving herbs include freezing in water or unsalted butter. Herbs can be chopped and added to water in an ice cube tray. After freezing, the ice cubes are emptied into a plastic freezer bag for storing in the freezer. Herbs also can be stirred into a bowl with unsalted butter, then spread on wax paper and rolled into a cylinder shape. The wax paper roll containing the butter and herbs is then stored in a freezer, and can be cut off in

the desired amount for cooking. Using either of these techniques, the herbs should be used within a year.

Meat

Unpreserved meat has only a relatively short life in storage. Perishable meats should be refrigerated, frozen, dried promptly or cured. Storage of fresh meats is a complex discipline that affects the costs, storage life and eating quality of the meat, and the appropriate techniques vary with the kind of meat and the particular requirements. For example, dry ageing techniques are sometimes used to tenderize gourmet meats by hanging them in carefully controlled environments for up to 21 days, while game animals of various kinds may be hung after shooting. Details depend on personal tastes and local traditions. Modern techniques of preparing meat for storage vary with the type of meat and special requirements of tenderness, 110pence, hygiene, and economy.

Semi-dried meats like salamis and country style hams are processed first with salt, smoke, sugar, acid, or other "cures" then hung in cool dry storage for extended periods, sometimes exceeding a year. Some of the materials added during the curing of meats serve to reduce the risks of food poisoning from anaerobic bacteria such as species of Clostridium that release botulinum toxin that can cause botulism. Typical ingredients of curing agents that inhibit anaerobic bacteria include nitrates. Such salts are dangerously poisonous in their own right and must be added in carefully controlled quantities and according to proper techniques. Their proper use has however saved many lives and much food spoilage.

Like the semi-dried meats, most salted, smoked, and simply-dried meats of different kinds that once were staples in particular regions, now are largely luxury snacks or garnishes; examples include jerky, biltong, and varieties of pemmican, but ham and bacon for instance, still are staples in many communities.

Food rotation

Food rotation is important to preserve freshness. When food is rotated, the food that has been in storage the longest is used first. As food is used, new food is added to the pantry to replace it; the essential rationale is to use the oldest food as soon as possible so that nothing is in storage too long and becomes unsafe to eat. Labelling food with paper labels on the storage container, marking the date that the container is placed in storage, can make this practice simpler. The best way to rotate food storage is to prepare meals with stored food on a daily basis.

For emergency preparation

Guides for surviving emergency conditions in many parts of the world recommend maintaining a store of essential foods; typically water, cereals, oil, dried milk, and protein rich foods such as beans, lentils, tinned meat and fish. A food storage calculator can be used to help determine how much of these staple foods a person would need to store in order to sustain life for one full year. In addition to storing the basic food items many people choose to supplement their food storage with frozen or preserved garden-grown fruits and vegetables and freeze-dried or canned produce. An unvarying diet of staple foods prepared in the same manner can cause appetite exhaustion, leading to less caloric intake. Another benefit to having a basic supply of food storage in the home is for the potential cost savings. Costs of dry bulk foods (before preparation) are often considerably less than convenience and fresh foods purchased at local markets or supermarkets. There is a significant market in convenience foods for campers, such as dehydrated food products.

Commercial food logistics

Fig 4.06 Silos connected to a grain elevator on a farm in Israel.

Grain and beans are stored in tall grain elevators, almost always at a rail head near the point of production. The grain is shipped to a final user in hopper cars. In the former Soviet Union, where harvest was poorly controlled, grain was often irradiated at the point of production to suppress mold and insects. In the U.S., threshing and drying is performed in the field, and transport is nearly sterile and in large containers that effectively suppresses pest access, which eliminates the need for irradiation. At any given time, the U.S. usually has about two weeks worth of stored grains for the population.

Fresh fruits and vegetables are sometimes packed in plastic packages and cups for fresh premium markets, or placed in large plastic tubs for sauce and soup processors. Fruits and vegetables are usually refrigerated at the earliest possible moment, and even so have a shelf life of two weeks or less.

In the United States, livestock is usually transported live, slaughtered at a major distribution point, hung and transported for two days to a week in refrigerated rail cars, and then butchered and sold locally. Before refrigerated rail cars, meat had to be transported live, and this placed its cost so high that only farmers and the wealthy could afford it every day. In Europe much meat is transported live and slaughtered close to the point of sale. In much of Africa and Asia most meat is for local populations is raised, slaughtered and eaten locally, which is believed to be less stressful for the animals involved and minimizes meat storage needs. In Australia and New Zealand, where a large proportion of meat production is for export, meat enters the cold chain early, being stored in large freezer plants before being shipped overseas in freezer ships.

CHECK YOUR PROGRESS

Explain the major purposes served by Food storage

Elaborate on the care to be taken while storing food items like grains, spices and herbs domestically.

Discuss about care to be taken while freezing and thawing food items.

4.03 FOOD SAFETY

Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent foodborne illness. This includes a number of routines that should be followed to avoid potential health hazards. In this way food safety often overlaps with food defense to prevent harm to consumers. The tracks within this line of thought are safety between industry and the market and then

between the market and the consumer. In considering industry to market practices, food safety considerations include the origins of food including the practices relating to food labeling, food hygiene, food additives and pesticide residues, as well as policies on biotechnology and food and guidelines for the management of governmental import and export inspection and certification systems for foods. In considering market to consumer practices, the usual thought is that food ought to be safe in the market and the concern is safe delivery and preparation of the food for the consumer.

Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning. In developed countries there are intricate standards for food preparation, whereas in lesser developed countries the main issue is simply the availability of adequate safe water, which is usually a critical item. In theory, food poisoning is 100% preventable. The five key principles of food hygiene, according to WHO, are:

1. Prevent contaminating food with pathogens spreading from people, pets, and pests.
2. Separate raw and cooked foods to prevent contaminating the cooked foods.
3. Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
4. Store food at the proper temperature.
5. Do use safe water and safe raw materials.

Issues

Food safety issues and regulations concern:

- Agriculture and animal husbandry practices
- Food manufacturing practices
- Food additives
- Novel foods
- Genetically modified foods
- Food label

ISO 22000

ISO 22000 is a standard developed by the International Organization for Standardization dealing with food safety. This is a general derivative of ISO 9000. ISO 22000 standard: The ISO 22000 international standard specifies the requirements for a food safety management system that involves **interactive communication, system management, prerequisite programs, HACCP principles.**

Incidence

A 2003 World Health Organization (WHO) report concluded that about 30% of reported food poisoning outbreaks in the WHO European Region occur in private homes. According to the WHO and CDC, in the USA alone, annually, there are 76 million cases of foodborne illness leading to 325,000 hospitalizations and 5,000 deaths.

Regulations by jurisdiction and agency

WHO and FAO

In 1963, the WHO and FAO published the Codex Alimentarius which serves as an guideline to food safety.

However, according to Unit 04 – Communication of Health & Consumers Directorate-General of the European Commission (SANCO): "The Codex, while being recommendations for voluntary application by members, Codex standards serve in many cases as a basis for national legislation. The reference made to Codex food safety standards in the World Trade Organizations' Agreement on Sanitary and Phytosanitary measures (SPS Agreement) means that Codex has far reaching implications for resolving trade disputes. WTO members that wish to apply stricter food safety measures than those set by Codex may be required to justify these measures scientifically." So, an agreement made in 2003, signed by all member states, inclusive all EU, in the codex Stan Codex 240 – 2003 for coconut milk, sulphite containing additives like E223 and E 224 are allowed till 30 mg/kg, does NOT mean, they are allowed into the EU, see Rapid Alert System for Food and Feed (RASFF) entries from Denmark: 2012.0834; 2011.1848; en 2011.168, "sulphite 113pence113g113ion in coconut milk from Thailand ". Same for polysorbate E 435: see 2012.0838 from Denmark, 113pence113g113ion polysorbates in coconut milk and, 2007.AIC from France. Only for the latter the EU amended its regulations with (EU) No 583/2012 per 2 July 2012 to allow this additive, already used for decades and absolutely necessary.

Australia

Food Standards Australia New Zealand requires all food businesses to implement food safety systems. These systems are designed to ensure food is safe to consume and halt the increasing incidence of food poisoning, and they include basic food safety training for at least one person in each business. Food safety training is delivered in various forms by, among other 113pence113g113ion113, Registered Training Organizations (RTOs), after which staff are issued a nationally 113pence113g113i unit of competency code on their certificate. Basic food safety training includes:

- Understanding the hazards associated with the main types of food and the conditions to prevent the growth of bacteria which can cause food poisoning and to prevent illness.
- Potential problems associated with product packaging such as leaks in vacuum packs, damage to packaging or pest infestation, as well as problems and diseases spread by pests.
- Safe food handling. This includes safe procedures for each process such as receiving, re-packing, food storage, preparation and cooking, cooling and re-heating, displaying products, handling products when serving customers, packaging, cleaning and sanitizing, pest control, transport and delivery. Also covers potential causes of cross contamination.
- Catering for customers who are particularly at risk of food-borne illness, as well as those with allergies or intolerance.
- Correct cleaning and sanitizing procedures, cleaning products and their correct use, and the storage of cleaning items such as brushes, mops and cloths.
- Personal hygiene, hand washing, illness, and protective clothing.

Food safety standards and requirements are set out at the national level in the Food Standards Code, and brought Into force in each state by state-based Acts and Regulations. Legislation means that people responsible for selling or serving unsafe food may be liable for heavy fines.

China

Food safety is a growing concern in Chinese agriculture. The Chinese government oversees agricultural production as well as the manufacture of food packaging, containers, chemical additives, drug production, and business regulation. In recent years, the Chinese government attempted to consolidate food regulation with the creation of the State Food and Drug Administration in 2003, and officials have also been under increasing public and international pressure to solve food safety problems. However, it appears that regulations are not well known by the trade. Labels used for "green" food, "organic" food and "pollution-free" food are not well recognized by traders and many are unclear about their meaning. A survey by the World Bank found that supermarket managers had difficulty in obtaining produce that met safety requirements and found that a high percentage of produce did not comply with established standards.

Traditional marketing systems, whether in China or the rest of Asia, presently provide little motivation or incentive for individual farmers to make improvements to either quality or safety as their produce tends to get grouped together with standard products as it progresses through the marketing channel. Direct linkages between farmer groups and traders or ultimate buyers, such as supermarkets, can help avoid this problem. Governments need to improve the condition of many markets through upgrading management and reinvesting market fees in physical infrastructure. Wholesale markets need to investigate the feasibility of developing separate sections to handle fruits and vegetables that meet defined safety and quality standards.

European Union

The parliament of the European Union (EU) makes legislation in the form of directives and regulations, many of which are mandatory for member states and which therefore must be incorporated into individual countries' national legislation. As a very large 114pence114g114ion that exists to remove barriers to trade between member states, and into which individual member states have only a proportional influence, the outcome is often seen as an excessively bureaucratic 'one size fits all' approach. However, in relation to food safety the tendency to err on the side of maximum protection for the consumer may be seen as a positive benefit. The EU parliament is informed on food safety matters by the European Food Safety Authority.

Individual member states may also have other legislation and controls in respect of food safety, provided that they do not prevent trade with other states, and can differ considerably in their internal structures and approaches to the regulatory control of food safety.

From 13 December 2014, new legislation – the EU Food Information for Consumers Regulation 1169/2011 – require food businesses to provide allergy information on food sold unpackaged, in for example catering outlets, deli counters, bakeries and sandwich bars.

France

Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (anses) is a French governmental agency dealing with food safety.

Germany

The Federal Ministry of Food, Agriculture and Consumer Protection (BMEL) is a Federal Ministry of the Federal Republic of Germany. **History**: Founded as Federal Ministry of Food, Agriculture and Foresting in 1949, this name did not change until 2001. Then the name changed to Federal Ministry of Consumer Protection, Food and Agriculture. At the 22nd of November 2005, the name got changed again to its current state: Federal Ministry of Food, Agriculture and Consumer Protection. The reason for this last change was that all the resorts should get equal ranking which was achieved by sorting the

resorts alphabetically. **Vision**: A balanced and healthy diet with safe food, distinct consumer rights and consumer information for various areas of life, and a strong and sustainable agriculture as well as perspectives for our rural areas are important goals of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). The Federal Office of Consumer Protection and Food Safety is under the control of the Federal Ministry of Food, Agriculture and Consumer Protection. It exercises several duties, with which it contributes to safer food and thereby intensifies health-based consumer protection in Germany. Food can be manufactured and sold within Germany without a special permission, as long as it does not cause any damage on consumers' health and meets the general standards set by the legislation. However, manufacturers, carriers, importers and retailers are responsible for the food they pass into circulation. They are obliged to ensure and document the safety and quality of their food with the use of in-house control mechanisms.

Hong Kong

In Hong Kong SAR, the Food and Environmental Hygiene Department is in charge of ensuring food sold is safe and fit for consumption.

Hungary

In Hungary, the National Food Chain Safety Office controls the food business operators including agricultural producers, food processors, retailers, caterers, input material suppliers and private laboratories. Its activities also cover risk assessment, risk communication and related research.

India

Food Safety and Standards Authority of India, established under the Food Safety and Standards Act, 2006, is the regulating body related to food safety and laying down of standards of food in India.

New Zealand

The New Zealand Food Safety Authority (NZFSA), or Te Pou Oranga Kai O Aotearoa is the New Zealand government body responsible for food safety. NZFSA is also the controlling authority for imports and exports of food and food-related products. The NZFSA as of 2012 is now a division of the Ministry for Primary Industries (MPI) and is no longer its own organization.

Pakistan

Pakistan does not have an integrated legal framework but has a set of laws, which deals with various aspects of food safety. These laws, despite the fact that they were enacted long time ago, have tremendous capacity to achieve at least minimum level of food safety. However, like many other laws, these laws remain very poorly enforced. There are four laws that specifically deal with food safety. Three of these laws directly focus issues related to food safety, while the fourth, the Pakistan Standards and Quality Control Authority Act, is indirectly relevant to food safety.

The Pure Food Ordinance 1960 consolidates and amends the law in relation to the preparation and the sale of foods. All provinces and some northern areas have adopted this law with certain amendments. Its aim is to ensure purity of food being supplied to people in the market and, therefore, provides for preventing adulteration. The Pure Food Ordinance 1960 does not apply to cantonment areas. There is a separate law for cantonments called "The Cantonment Pure Food Act, 1966". There is no substantial difference between the Pure Food Ordinance 1960 and The Cantonment Pure Food Act. Even the rules of operation are very much similar.

Pakistan Hotels and Restaurant Act, 1976 applies to all hotels and restaurants in Pakistan and seeks to control and regulate the rates and standard of service(s) by hotels and restaurants. In addition to other provisions, under section 22(2), the sale of food or beverages that are contaminated, not prepared hygienically or served in utensils that are not hygienic or clean is an offense. There are no express provisions for consumer complaints in the Pakistan Restaurants Act, 1976, Pakistan Penal Code, 1860 and Pakistan Standards and Quality Control Authority Act, 1996. The laws do not prevent citizens from lodging complaints with the concerned government officials; however, the consideration and handling of complaints is a matter of discretion of the officials.

South Korea

Korea Food & Drug Administration

Korea Food & Drug Administration (KFDA) is working for food safety since 1945. It is part of the Government of South Korea.

IOAS-Organic Certification Bodies Registered in KFDA: "Organic" or related claims can be 116pence116 on food products when organic certificates are considered as valid by KFDA. KFDA admits organic certificates which can be issued by 1) IFOAM (International Federation of Organic Agriculture Movement) accredited certification bodies 2) Government accredited certification bodies – 328 bodies in 29 countries have been registered in KFDA.

Food Import Report: According to Food Import Report, it is supposed to report or register what you import. Competent authority is as follows:

Product	Authority
Imported Agricultural Products, Processed Foods, Food Additives, Utensils, Containers & Packages or Health Functional Foods	KFDA (Korea Food and Drug Administration)
Imported Livestock, Livestock products (including Dairy products)	NVRQS (National Veterinary Research and Quarantine Service)
Packaged meat, milk & dairy products (butter, cheese), hamburger patties, meat ball and other processed products which are stipulated by Livestock Sanitation Management Act	NVRQS (National Veterinary Research and Quarantine Service)
Imported Marine products; fresh, chilled, frozen, salted, dehydrated, eviscerated marine produce which can be recognized its characteristics	NFIS (National Fisheries Products Quality Inspection Service)

National Institute of Food and Drug Safety Evaluation

National Institute of Food and Drug Safety Evaluation (NIFDS) is functioning as well. The National Institute of Food and Drug Safety Evaluation is a national organization for toxicological tests and research. Under the Korea Food & Drug Administration, the Institute performs research on toxicology, pharmacology, and risk analysis of foods, drugs, and their additives. The Institute strives primarily to understand important biological triggering mechanisms and improve assessment methods of human exposure, sensitivities, and risk by (1) conducting basic, applied, and policy research that closely examines biologically triggering harmful effects on the regulated products such as foods, food additives, and drugs, and operating the national toxicology program for the toxicological test development and inspection of hazardous chemical substances assessments. The Institute ensures

safety by investigation and research on safety by its own researchers, contract research by external academicians and research centers.

Taiwan

In Taiwan, the Ministry of Health and Welfare in charge of Food and Drug Safety, also evaluate the catering industry to maintenance the food product quality. Currently, US$29.01 million of budget is allocated each year for food safety-related efforts.

United Kingdom

In the UK the Food Standards Agency is an independent government department responsible for food safety and hygiene across the UK. They work with businesses to help them produce safe food, and with local authorities to enforce food safety regulations. In 2006 food hygiene legislation changed and new requirements came into force. The main requirement resulting from this change is that if you own or run a food business in the UK, you must have a documented Food Safety Management System, which is based on the principles of Hazard Analysis Critical Control Point HACCP.

United States

The US food system is regulated by numerous federal, state and local officials. It has been criticized as lacking in "organization, regulatory tools, and not addressing food borne illness."

Federal level regulation

The Food and Drug Administration publishes the Food Code, a model set of guidelines and procedures that assists food control jurisdictions by providing a scientifically sound technical and legal basis for regulating the retail and food service industries, including restaurants, grocery stores and institutional foodservice providers such as nursing homes. Regulatory agencies at all levels of government in the United States use the FDA Food Code to develop or update food safety rules in their jurisdictions that are consistent with national food regulatory policy. According to the FDA, 48 of 56 states and territories, representing 79% of the U.S. population, have adopted food codes patterned after one of the five versions of the Food Code, beginning with the 1993 edition.

In the United States, federal regulations governing food safety are fragmented and complicated, according to a February 2007 report from the Government Accountability Office. There are 15 agencies sharing oversight responsibilities in the food safety system, although the two primary agencies are the U.S. Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS), which is responsible for the safety of meat, poultry, and processed egg products, and the Food and Drug Administration (FDA), which is responsible for virtually all other foods.

The Food Safety and Inspection Service has approximately 7,800 inspection program personnel working in nearly 6,200 federally inspected meat, poultry and processed egg establishments. FSIS is charged with administering and enforcing the Federal Meat Inspection Act, the Poultry Products Inspection Act, the Egg Products Inspection Act, portions of the Agricultural Marketing Act, the Humane Slaughter Act, and the regulations that implement these laws. FSIS inspection program personnel inspect every animal before slaughter, and each carcass after slaughter to ensure public health requirements are met. In fiscal year (FY) 2008, this included about 50 billion pounds of livestock carcasses, about 59 billion pounds of poultry carcasses, and about 4.3 billion pounds of processed egg products. At U.S. borders, they also inspected 3.3 billion pounds of imported meat and poultry products.

Industry pressure

There have been concerns over the efficacy of safety practices and food industry pressure on U.S. regulators. A study reported by Reuters found that "the food industry is jeopardizing U.S. public health by withholding information from food safety investigators or pressuring regulators to withdraw or alter policy designed to protect consumers". A survey found that 25% of U.S. government inspectors and scientists surveyed have experienced during the past year corporate interests forcing their food safety agency to withdraw or to modify agency policy or action that protects consumers. Scientists have observed that management undercuts field inspectors who stand up for food safety against industry pressure. According to Dr. Dean Wyatt, a USDA veterinarian who oversees federal slaughter house inspectors, "Upper level management does not adequately support field inspectors and the actions they take to protect the food supply. Not only is there lack of support, but there's outright obstruction, retaliation and abuse of power." A growing number of food and beverage manufacturers are improving food safety standards by incorporating a food safety management system which automates all steps in the food quality management process.

State and local regulation

A number of U.S. states have their own meat inspection programs that substitute for USDA inspection for meats that are sold only in-state. Certain state programs have been criticized for undue leniency to bad practices.

However, other state food safety programs supplement, rather than replace, Federal inspections, generally with the goal of increasing consumer confidence in the state's produce. For example, state health departments have a role in investigating outbreaks of food-borne disease bacteria, as in the case of the 2006 outbreak of *Escherichia coli* O157:H7 (a pathogenic strain of the ordinarily harmless bacteria, *E. coli*) from processed spinach. Health departments also promote better food processing practices to eliminate these threats.

In addition to the US Food and Drug Administration, several states that are major producers of fresh fruits and vegetables (including California, Arizona and Florida) have their own state programs to test produce for pesticide residues.

Restaurants and other retail food establishments fall under state law and are regulated by state or local health departments. Typically these regulations require official inspections of specific design features, best food-handling practices, and certification of food handlers. In some places a letter grade or numerical score must be prominently posted following each inspection. In some localities, inspection deficiencies and remedial action are posted on the Internet.

Vietnam

The Vietnam Food Administration is reafor managing food hygiene, safety, and quality and has made significant progress since its establishment in 1999. Food safety remains a high priority in Vietnam with the growth of export markets and increasing food imports raising the need to rapidly build capacity of the Food Administration in order to reduce threats of foodborne disease. The Food Administration has demonstrated commitment to the food safety challenges it faces, and has embarked on an innovative capacity building activity with technical assistance from the World Health Organization.

Manufacturing control

HACCP guidelines

Consumer labeling

United Kingdom

Foodstuffs in the UK have one of two labels to indicate the nature of the deterioration of the product and any subsequent health issues. EHO Food Hygiene certification is required to prepare and distribute food. While there is no specified expiry date of such a qualification the changes in legislation it is suggested to update every five years.

Best before indicates a future date beyond which the food product *may* lose quality in terms of taste or texture amongst others, but does not imply any serious health problems if food is consumed beyond this date (within reasonable limits).

Use by indicates a legal date beyond which it is not permissible to sell a food product (usually one that deteriorates fairly rapidly after production) due to the potential serious nature of consumption of pathogens. Leeway is sometimes provided by producers in stating **display until** dates so that products are not at their limit of safe consumption on the actual date stated (this latter is voluntary and not subject to regulatory control). This allows for the variability in production, storage and display methods.

United States

With the exception of infant formula and baby foods which must be withdrawn by their expiration date, Federal law does not require expiration dates. For all other foods, except dairy products in some states, freshness dating is strictly voluntary on the part of manufacturers. In response to consumer demand, perishable foods are typically 119pence119 with a **Sell by** date. It is up to the consumer to decide how long after the Sell by date a package is usable. Other common dating statements are **Best if used by**, **Use-by date**, **Expiration date**, **Guaranteed fresh <date>**, and **Pack date**.

Australia and New Zealand

Guide to Food Labelling and Other Information Requirements: This guide provides background information on the general 119pence119g requirements in the Code. The information in this guide applies both to food for retail sale and to food for catering purposes. Foods for catering purposes means those foods for use in restaurants, canteens, schools, caterers or self-catering institutions, where food is offered for immediate consumption. Labelling and information requirements in the new Code apply both to food sold or prepared for sale in Australia and New Zealand and food imported into Australia and New Zealand. Warning and Advisory Declarations, Ingredient Labelling, Date Marking, Nutrition Information Requirements, Legibility Requirements for Food Labels, Percentage Labelling, Information Requirements for Foods Exempt from Bearing a Label.

CHECK YOUR PROGRESS

Describe what is covered under the study of Food safety.

Explain the five key principles of food hygiene, according to World Health Organization.

Explain the issues and concerns in Food Safety.

4.04 FOOD SPOILAGE

Spoilage is the process in which food deteriorates to the point in which it is not edible to humans or its quality of edibility becomes reduced. Various external forces are responsible for the spoilage of food. Food that is capable of spoiling is referred to as perishable food.

Reasons

Harvested foods decompose from the moment they are harvested due to attacks from enzymes, oxidation and microorganisms. These include bacteria, mold, yeast, moisture, temperature and chemical reaction.

Bacteria

Bacteria can be responsible for the spoilage of food. When bacteria breaks down the food, acids and other waste products are created in the process. While the bacteria itself may or may not be harmful, the waste products may be unpleasant to taste or may even be harmful to one's health.

Yeasts

Yeasts can be responsible for the decomposition of food with a high sugar content. The same effect is useful in the production of various types of food and beverages, such as bread, yogurt, cider, and alcoholic beverages.

Signs

Signs of food spoilage may include an appearance different from the food in its fresh form, such as a change in color, a change in texture, an unpleasant odor, or an undesirable taste. The item may become softer than normal. If mold occurs, it is often visible externally on the item.

Consequences

"food poisoning", and more properly as "foodborne illness".

Prevention

A number of methods of prevention can be used that can either totally prevent, delay, or otherwise reduce food spoilage.

Food rotation system uses the first in first out method (FIFO), which ensures that the first item purchased is the first item consumed.

Preservatives can expand the shelf life of food and can lengthen the time long enough for it to be harvested, processed, sold, and kept in the consumer's home for a reasonable length of time.

Refrigeration can increase the shelf life of certain foods and beverages, though with most items, it does not indefinitely expand it. Freezing can preserve food even longer, though even freezing has limitations.

A high-quality vacuum flask (thermos) will keep coffee, soup, and other boiling-hot foods above the danger zone (140F/58C) for over 24 hours.

Canning of food can preserve food for a particularly long period of time, whether canned at home or commercially. Canned food is vacuum packed in order to keep oxygen out of the can that is needed to allow bacteria to break it down. Canning does have limitations, and does not preserve the food indefinitely.

Lactic acid fermentation also preserves food and prevents spoilage.

CHECK YOUR PROGRESS

Explain the main reasons for Food spoilage

Elaborate how food spoilage can be prevented.

Explain the consequences of food spoilage.

4.05 MEAT SPOILAGE

The **spoilage of meat** occurs, if the meat is untreated, in a matter of hours or days and results in the meat becoming unappetizing, poisonous or infectious. Spoilage is caused by the practically unavoidable infection and subsequent decomposition of meat by bacteria and fungi, which are borne by the animal itself, by the people handling the meat, and by their implements. Meat can be kept edible for a much longer time – though not indefinitely – if proper hygiene is observed during production and processing, and if appropriate food safety, food preservation and food storage procedures are applied.

Infection

The organisms spoiling meat may infect the animal either while still alive ("endogenous disease") or may contaminate the meat after its slaughter ("exogenous disease"). There are numerous diseases that humans may contract from endogenously infected meat, such as anthrax, bovine tuberculosis, brucellosis, salmonellosis, listeriosis, trichinosis or taeniasis.

Infected meat, however, should be eliminated through systematic meat inspection in production, and consequently, consumers will more often encounter meat exogenously spoiled by bacteria or fungi after the death of the animal. One source of infectious organisms is bacteraemia, the presence of bacteria in the blood of slaughtered animals. The large intestine of animals contains some 3.3×10^{13} viable bacteria, which may infect the flesh after death if the carcass is improperly dressed. Contamination can also occur at the slaughterhouse through the use of improperly cleaned slaughter or dressing implements, such as powered knives, on which bacteria persist. A captive bolt pistol's bolt alone may carry about 400,000 bacteria per square centimeter. After slaughter, care must be taken not to infect the meat through contact with any of the various sources of infection in the abattoir, notably the hides and soil adhering to them, water used for washing and cleaning, the dressing implements and the slaughterhouse personnel.

Bacterial genera commonly infecting meat while it is being processed, cut, packaged, transported, sold and handled include Salmonella spp., Shigella spp., E. coli, B. proteus, S. epidermidis and Staph. Aureus, Cl. Welchii, B. cereus and faecal streptococci. These bacteria are all commonly carried by humans; infectious bacteria from the soil include Cl. Botulinum. Among the molds commonly infecting meat are Penicillium, Mucor, Cladosporium, Alternaria, Sporotrichium and Thamnidium.

As these microorganisms colonize a piece of meat, they begin to break it down, leaving behind toxins that can cause enteritis or food poisoning, potentially lethal in the rare case of botulism. The microorganisms do not survive a thorough cooking of the meat, but several of their toxins and microbial spores do. The microbes may also infect the person eating the meat, although against this the microflora of the human gut is normally an effective barrier.

Testing

The presence of infectious agents can be detected with a number of tests during the production and processing of meat, but testing by itself is not sufficient to ensure adequate food safety. The industry-standard *Hazard Analysis Critical Control Points* (HACCP) system provides for a comprehensive quality management framework as a part of which such tests can be conducted. Testing methods applied include phage and serological typing, direct epifluorescence filter techniques (DEFT) and plasmid profiling.

Symptoms

Microbial spoilage

Depending on oxygen availability, meat spoilage by micro-organisms can manifest itself as follows:

Oxygen	Microbial agent	Symptoms
Present	Aerobic bacteria	• Surface slime • Discolouration • Gas production • Change in odor • Fat decomposition
Present	Yeasts	• Surface slime • Discoloration • Change in odor and taste • Fat decomposition
Present	Molds	• Sticky and “whiskery” surface • Discoloration • Change in odor • Fat decomposition

Absent	Anaerobic bacteria	• Putrefaction and foul odors • Gas production • Souring

CHECK YOUR PROGRESS

Explain the reasons for Meat spoilage

Describe the symptoms of microbial spoilage in meat

4.06 LARDER

A **larder** is a cool area for storing food prior to use. Larders were commonplace in houses before the widespread use of the refrigerator.

Fig 4.07: The larder at Mar Lodge

Essential qualities

- as cool as possible

- close to food preparation areas
- constructed to exclude flies and vermin
- easy to keep clean
- equipped with shelves and cupboards appropriate to the food being stored

Description

In the northern hemisphere, most houses would be arranged to have their larder and kitchen on the north or west side of the house, where it received the least amount of sun. In Australia and New Zealand, larders were placed on the south or east sides of the house for the same reason.

Many larders have small unglazed windows with the window opening covered in fine mesh. This allows free circulation of air without allowing flies to enter. Many larders also have tiled or painted walls to simplify cleaning. Older larders, and especially those in larger houses, have hooks in the ceiling to hang joints of meat or game. Others have insulated containers for ice, anticipating the future development of refrigerators.

A pantry may contain a thrawl, a term used in Derbyshire and Yorkshire, to denote a stone slab or shelf used to keep food cool in the days before refrigeration was domestically available. In the late medieval hall, a thrawl would have been appropriate to a larder. In a large or moderately large nineteenth-century house, all these rooms would have been placed as low in the building as possible, or as convenient, in order to use the mass of the ground to retain a low summer temperature. For this reason, a buttery was usually called the cellar by this stage.

Modern homes

Very few modern houses have larders, since this need is now satisfied by refrigerators, freezers, and the convenience of modern grocery stores that eliminate the need to store food for long periods.

History

In medieval households the word “larder” referred both to an office responsible for fish, jams, and meat, as well as to the room where these commodities were kept. It was headed by a *larderer*. The Scots term for larder was *124pence*, and so in Scotland larderers (also pantlers and cellarers) were known as *spencers*. This is one of the derivations of the modern surname.

The office generally was subordinated to the kitchen and existed as a separate office only in larger households. It was closely connected with other offices of the kitchen, such as the saucery and the scullery.

Larders were used in the Indus River Valley to store bones of goats, oxen, and sheep. These larders were made of large clay pots.

CHECK YOUR PROGRESS

List the essential qualities of a Larder

Describe a typical larder.

4.07 ROOT CELLAR

A **root cellar** is a structure, usually underground or partially underground, used for storage of vegetables, fruits, nuts, or other foods. Its name reflects the traditional focus on root crops stored in an underground cellar, which is still often true, although a wide variety of foods can potentially be stored, for weeks to months, depending on the crop and the conditions, and the structure may not always be underground.

Fig 4.08: Interior of a large Wyoming root cellar with crops

Root cellaring has been vitally important in various eras and places for winter food supply. Although present-day food distribution systems and refrigeration have rendered root cellars unnecessary for many people, they remain important for many people who value self-sufficiency, whether by economic necessity or by choice and for personal satisfaction. Thus they are popular among diverse audiences, including gardeners, organic farmers, DIY fans, homesteaders, preppers, subsistence farmers, and enthusiasts of local food, slow food, heirloom plants, and traditional culture.

Fig 4.09: A pair of modern potato cellars in southeastern Idaho

Function

Fig 4.10: Two traditional sod-covered potato cellars in southeastern Idaho

Root cellars are for keeping food supplies at controlled temperatures and steady humidity. Many crops keep longest just above freezing (1–3 °C) and at high humidity (90–95%), but the optimal temperature and humidity ranges vary by crop, and various crops keep well at temperatures further above near-freezing but below room temperature. A few crops even keep better in low humidity. Root cellars keep food from freezing during the winter and keep food cool during the summer to prevent spoilage. Typically, a variety of vegetables are placed in the root cellar in the autumn, after harvesting. A secondary use for the root cellar is as a place to store wine, beer, or other homemade alcoholic beverages.

Vegetables stored in the root cellar primarily consist of potatoes, turnips, and carrots. Other food supplies placed in the root cellar over the winter months include beets, onions, jarred preserves and jams, salt meat, salt turbot, salt herring, winter squash, and cabbage. A potato cellar is sometimes called a potato barn or potato house.

Separate cellars are occasionally used for storing fruits, such as apples. Apples are one of the crops that give off enough ethylene gas to hasten the overripening or spoilage of other crops stored nearby, although this effect is variable and many farms successfully store vegetables without segregating their apples. Water, bread, butter, milk, and cream are sometimes stored in the root cellar also. In addition, items such as salad greens, fresh meat, and jam pies are kept in the root cellar early in the day to keep cool until they are needed for supper.

The ability of some vegetables and fruit to keep for months in favorable cellar conditions stems in part from the fact that they are not entirely inanimate even after picking. Although they may no longer qualify as living, the plant cells continue to respire in some impaired but nonzero way, resisting bacterial decomposition for a time. The effect can be compared to the way that cut flowers in a vase of water last much longer than cut flowers lying on a table: the flowers in the vase are not entirely dead yet and continue to respire. The analogy is not exact, but the high humidity that supports many cellared crops is involved in this residual respiration.

In some cases plants are transplanted from the field to the dirt floor of a cellar in autumn, and they then continue living in the cellar for months. The fact that they cannot thrive or grow larger in the low-light, low-temperature conditions is not a problem; the only objective is to keep them alive instead of dead, thus warding off decomposition. This is a form of season extension in which the *growing* season is not extended but the *harvest* season is substantially extended.

Closets, crawlspaces, garages, sheds, and attics have all been used successfully for storage of at least some kinds of crops. Even the space under a bed can store some crops (such as pumpkins) for several weeks.

Construction

Common construction methods are:

1. Digging down into the ground and erecting a shed or house over the cellar (access is via a trap door in the shed).
2. Digging into the side of a hill (easier to excavate and facilitates water drainage).
3. Building a structure at ground level and piling rocks, earth, and/or sod around and over it. This may be easier to build on rocky terrain where excavation is difficult.

Most root cellars were built using stone, wood, mortar (cement), and sod. Newer ones may be made of concrete with sod on top.

CHECK YOUR PROGRESS

Describe a Root cellar

Elaborate on the functions of root cellars.

Explain how root cellars are constructed.

4.08 PANTRY

A **pantry** is a room where beverages, food, and sometimes dishes, household cleaning chemicals, linens, or provisions are stored. Food and beverage pantries serve in an ancillary capacity to the kitchen. The word "pantry" derive from the same source as the Old French term *paneterie*; that is from *pain*, the French form of the Latin *panis* for bread.

History in Europe and United States

Late Middle Ages

In a late medieval hall, there were separate rooms for the various service functions and food storage. A pantry was where bread was kept and food preparation associated with it was done. The head of the office responsible for this room was referred to as a **pantler**. There were similar rooms for storage of bacon and other meats (larder), alcoholic beverages (buttery) known for the "butts" of barrels stored there), and cooking (kitchen).

Fig 4.11: Nineteenth century pantry in Museu Romàntic Can Papiol in Vilanova i la Geltrú

Colonial era

In the United States, pantries evolved from early Colonial American "butteries", built in a cold north corner of a Colonial home (more commonly referred to and spelled as "butt'ry"), into a variety of pantries in self-sufficient farmsteads. Butler's pantries, or china pantries, were built between the dining room and kitchen of a middle class English or American home, especially in the latter part of

the 19th into the early 20th centuries. Great estates, such as the Biltmore Estate in Asheville, North Carolina or Stan Hywet Hall in Akron, Ohio, had large warrens of pantries and other domestic "offices", echoing their British "Great House" counterparts.

Victorian era

By the Victorian era, large houses and estates in Britain maintained the use of separate rooms, each one dedicated to a distinct stage of food preparation and cleanup. The kitchen was for cooking, while food storage was done in a storeroom. Food preparation before cooking was done in a larder, and dishwashing was done in a scullery or pantry, "depending on the type of dish and level of dirt". Since the scullery was the room with running water, it had a sink, and it was where the messiest food preparation took place, such as cleaning fish and cutting raw meat. The pantry was where tableware was stored, such as china, glassware, and silverware. If the pantry had a sink for washing tableware, it was a wooden sink lined with lead, to prevent chipping the china and glassware while they were washed. In some middle-class houses, the larder, pantry, and storeroom might simply be large wooden cupboards, each with its exclusive purpose.

Modern pantry

The pantry is making a comeback in American and British homes, as part of a resurgence of nesting and homekeeping since the late 1990s. It is one of the most requested features in American homes today, despite modern homes having larger kitchen sizes than ever before. The demand is due both to the charm and nostalgia associated with the pantry, as well as to the pantry's practical, utilitarian purpose.

Today, the term may also be used for any small storeroom used for non-perishable foods such as canned goods; it need not be located near the kitchen, and is often found in a basement.

Types of pantries

Asian pantry

Traditionally, kitchens in Asia have been more open format than those of the West. The function of the pantry was generally served by wooden cabinetry. For example, in Japan, a kitchen cabinet is called a "Mizuya Tansu". A substantial tradition around woodworking and cabinetry in general developed in Japan, especially throughout the Tokugawa era. A huge number of designs for Tansu (chests or cabinets) were made, each tailored towards one specific purpose or another.

The idea is very similar to that of the Hoosier cabinet, with a wide variety of functions being served by specific design innovations.

Butler's pantry

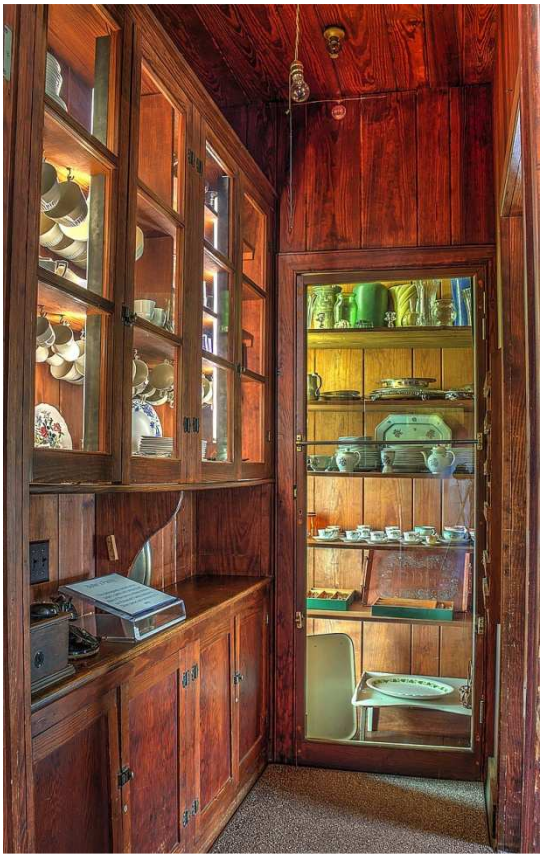

Fig 4.12: Butler's Pantry at the Little White House

A **butler's pantry** or **serving pantry** is a utility room in a large house, primarily used to store serving items, rather than food. Traditionally, a butler's pantry was used for cleaning, counting, and storage of silver; European butlers often slept in the pantry, as their job was to keep the silver under lock and key. The merchant's account books and wine log may also have been kept in there. The room would be used by the butler and other domestic staff; it is often called a butler's pantry even in households where there is no butler.

In modern homes, butler's pantries are usually located in transitional spaces between kitchens and dining rooms, and used as staging areas for serving meals. They commonly contain countertops, and storage for candles, serving pieces, table linens, tableware, wine, and other dining room articles. More elaborate versions may include dishwashers, refrigerators, or sinks.

Cold pantry

Fig 4.13 Cold pantry exterior vents

Some food, such as butter, eggs, milk, and such need to be kept cool. Before modern refrigeration was available, iceboxes were popular. However, the problem with an icebox was that the cabinet housing it was large, but the actual refrigerated space was quite small, so a clever and innovative solution was invented, the “cold pantry”, sometimes called a “California cooler”. The cold pantry usually consisted of a cabinet or cupboard with wooden-slat shelves (to allow for air circulation). An opening near the top vented to the outside, either through the roof or high out the wall. A second opening near the bottom vented also to the outside, but low near the ground and usually on the north side of the house where the air was cooler. As the air in the pantry warmed, it rose, escaping through the upper vent. This in turn drew cooler air in from the lower vent, providing constant circulation of cooler air. In the summertime, the temperatures in the cold pantry would usually hover several degrees lower than the ambient temperature in the house, while in the wintertime, the temperature in the cold pantry would be considerably lower than that in the house.

A cold pantry was the perfect place to keep foodstocks that did not necessarily need to be kept refrigerated. Breads, butter, cheesecakes, eggs, pastries, and pie were common foodstocks kept in a cold pantry. Vegetables could be brought up from the root cellar in smaller amounts and stored in the cold pantry until ready to use. With space in the icebox at a premium, the cold pantry was a great place to store fresh berries and fruit.

Hoosier cabinet

First developed in the early 1900s by the Hoosier Manufacturing Company in New Castle, Indiana, and popular into the 1930s, the Hoosier cabinet and its many imitators soon became an essential fixture in American kitchens. Often billed as a “pantry and kitchen in one”, the Hoosier brought the ease and readiness of a pantry, with its many storage spaces and working counter, right into the kitchen. It was sold in catalogues and through a unique sales program geared towards farm wives. Today, the Hoosier cabinet is a much sought-after domestic icon and widely reproduced.

CHECK YOUR PROGRESS

Explain the concept of Pantry

Describe the historic evolution of pantries.

Discuss the various types of pantries.

4.09 END QUESTIONS

1. Explain the major purposes served by Food storage
2. Elaborate on the care to be taken while storing food items like grains, spices and herbs domestically.
3. Discuss about care to be taken while freezing and thawing food items.

4. Describe what is covered under the study of Food safety.
5. Explain the five key principles of food hygiene, according to World Health Organization.
6. Explain the issues and concerns in Food Safety.

7. Explain the main reasons for Food spoilage
8. Elaborate how food spoilage can be prevented.
9. Explain the consequences of food spoilage.

10. Explain the reasons for Meat spoilage
11. Describe the symptoms of microbial spoilage in meat

12. List the essential qualities of a Larder
13. Descrine a typical larder.

14. Describe a Root cellar
15. Elaborate on the functions of root cellars.
16. Explain how root cellars are constructed.

17. Explain the concept of Pantry
18. Describe the historic evolution of pantries.

19. Discuss the various types of pantries.

4.10 REFERENCES AND FURTHER READING

Food storage

Food safety

Food spoilage

Meat spoilage

Larder

Root cellar

Pantry