

Course Name	: Production & Inventory Management
Course Code	: APBSS 407
Course level	: level 3
Credit Unit	: 4 CU
Contact Hours	: 60 Hrs

Course Description

The Course specifies stock management after the production level, stock derivatives & price fluctuations, types of stock, store management, factors that influence the nature, location & layout of store houses, as well as supply chain management.

Course Objective

- To equip students with skills of handling stock in business and how to keep it valuable on the market.
- To help them understand the chain links between the supplier and buyer and how to maintain a productive relationship amongst them.
- To provide them with knowledge of different levels of production and how these have an impact on the quality of goods produced.

Course Content

Introduction

- Stock management
- Sequences of stock management
- Business models of inventory management
- Types of stock
- Stock derivatives
- Stock price fluctuations
- Stock valuation

Storage and Handling of Materials

- General stores objectives
- Fundamental influences in store management
- The inverted 'T' warehouse flow
- Characteristics of the 'T' warehouse flow
- Factors that influence the nature, location and layout of stores/warehouses

Material Handling

- Objectives of Materials-handling
- Requirements of material-handling equipments
- Removal of waste materials
- Sources of waste materials
- Methods of removing waste materials

Supply Chain Management

- Definition of SCM
- Supplier relationships
- Strategic importance of supplier relationship
- Different types of buyer-supplier relationship models

- Methods of improving buyer-supplier relationship
- Suppliers cooperative Association
- Increased interest in supplier's relationship
- Factors that determine the nature of relationship with suppliers
- The Kraljic purchasing approach (matrix)

Summary of Supply Strategies

- Strategic Commodities(strategic partnership)
- Leverage commodities
- Ways through which strategic sourcing can be done
- How to improve buyer/supplier relationship

Partnering

- Definition of partnership
- Objectives of partnership in attempt to achieve improvement
- Critical success factors or variables to sustain partnerships
- Why partnerships fail

Mode of delivery Face to face lectures

Assessment

Coursework 40%

Exams 60%

Total Mark 100%

PRODUCTION AND INVENTORY MANAGEMENT

Stock management

Stock management is the function of understanding the stock mix of a company and the different demands on that stock. The demands are influenced by both external and internal factors and are balanced by the creation of Purchase order requests to keep supplies at a reasonable or prescribed level.

Retail supply chain

Stock management in the retail supply chain follows the following sequence:

1. Request for new stock from stores to head office
2. Head office issues purchase orders to the vendor
3. Vendor ships the goods
4. Warehouse receives the goods
5. Warehouse stocks and distributes to the stores
6. Stores receive the goods
7. Goods are sold to customers at the stores

The management of the inventory in the supply chain involves managing the physical quantities as well as the costing of the goods as it flows through the supply chain.

In managing the cost prices of the goods throughout the supply chain, several costing methods are employed:

1. Retail method
2. Weighted Average Price method

3. FIFO (First In First Out) method
4. LIFO (Last In First Out) method
5. LPP (Last Purchase Price) method
6. BNM (Bottle neck method)

Weighted Average Price Method

The calculation can be done for different periods. If the calculation is done on a monthly basis, then it is referred to the periodic method. In this method, the available stock is calculated by:

ADD Stock at beginning of period

ADD Stock purchased during the period

AVERAGE total cost by total qty to arrive at the Average Cost of Goods for the period.

This Average Cost Price is applied to all movements and adjustments in that period.

Ending stock in qty is arrived at by Applying all the changes in qty to the Available balance.

Multiplying the stock balance in qty by the Average cost gives the Stock cost at the end of the period.

Using the perpetual method, the calculation is done upon every purchase transaction.

Thus, the calculation is the same based on the periodic calculation whether by period (periodic) or by transaction (perpetual).

The only difference is the 'periodicity' or scope of the calculation. - Periodic is done monthly - Perpetual is done for the duration of the purchase until the next purchase

In practice, the daily averaging has been used to closely approximate the perpetual method. 6. Bottle neck method (depends on proper planning support)

Software applications

The implementation of inventory management applications has become a valuable tool for organizations looking to more efficiently manage stock. While the capabilities of applications vary, most inventory management applications give organizations a structured method of accounting for all incoming and outgoing inventory within their facilities. Organizations save a significant amount in costs associated with manual inventory counts, administrative errors and reductions in inventory stock-outs.

Business models

Just-in-time Inventory (JIT), Vendor Managed Inventory (VMI) and Customer Managed Inventory (CMI) are a few of the popular models being employed by organizations looking to have greater stock management control.

JIT is a model which attempts to replenish inventory for organizations when the inventory is required. The model attempts to avoid excess inventory and its associated costs. As a result, companies receive inventory only when the need for more stock is approaching.

VMI and CMI are two business models that adhere to the JIT inventory principles. VMI gives the vendor in a vendor/customer relationship the ability to monitor, plan and control inventory for their customers. Customers relinquish the order making responsibilities in exchange for timely inventory replenishment that increases organizational efficiency.

CMI allows the customer to order and control their inventory from their vendors/suppliers. Both VMI and CMI benefit the vendor as well as the customer. Vendors see a significant increase in sales due to increased inventory turns and cost savings realized by their customers, while customers realize similar benefits.

Stock control is used to evaluate how much stock is used. It is also used to know what is needed to be ordered. Stock control can only happen if a stock take has taken place. Stock rotation must be put into use with stock control by using the oldest products before the newer products.

Stock rotation

Stock rotation is the practice, used in hospitality and retail, especially in food stores such as restaurants and supermarkets, of moving products with an earlier sell-by date to the front of a shelf (or in the cooler if the item is on repack so they get worked out before the new product), so they get picked up and sold first, and of moving products with a later sell-by date to the back.

Description

Most, if not all, packaged perishable food products, will have either a sell by date on them or a *display until date*; in practice, these are exactly the same thing. After this date, it is either illegal for the store to sell them (this is the case in the United Kingdom) or the quality will have deteriorated to the point at which nobody will buy them. In either case, they cannot be sold.

If a product is still on shelves after its sell by date, it will have to be thrown away (recorded as wastage), which is both costly and wasteful to the store (suppliers must be paid even if stock is not sold). Therefore, it is imperative that sell by dates are strictly adhered to, and that products which will perish earlier be sold as quickly as possible.

Shoppers, on the most part, will simply walk up to a shelf and take the frontmost box of the product they are looking for; this is especially true if they are in a hurry. They will generally also, unless they are specifically looking for a product that will last longer, not pay much attention to sell by/use by dates. If products with an early sell by date are at the front, and later ones at the back, they will be sold first. If things are organised the other way round, or stock is improperly rotated, newer stock will be sold first, leaving out of date stock sitting on the shelves which will have to be thrown away.

Rotation also applies to loose products; in this case, there is usually no set sell by date, and produce must merely look fit to eat. Older stock is merely placed on top of newer stock to rotate it.

problems

Some customers are fully aware of the practice of rotation, and will reach towards the back of the shelf in order to get newer (and therefore slightly better) produce. Also, when applied to large amounts of produce, rotation can be difficult if not impossible. It only takes one careless worker to disrupt rotation and create problems.

Other methods of getting rid of stock

If a stock is nearing its sell by date, stock may be *reduced*, that is its price lowered so as to sell off certain stock quicker. This is usually combined with rotation, so that reduced stock is at the front and so more noticeable to customers.

Stock

The **stock** or **capital stock** of a business entity represents the original capital paid or invested into the business by its founders. It serves as a security for the creditors of a business since it cannot be withdrawn to the

detriment of the creditors. Stock is distinct from the property and the assets of a business which may fluctuate in quantity and value.

The stock of a business is divided into shares, the total of which must be stated at the time of business formation. Given the total amount of money invested into the business, a share has a certain declared face value, commonly known as the par value of a share. The par value is the *de minimis* (minimum) amount of money that a business may issue and sell shares for in many jurisdictions and it is the value represented as capital in the accounting of the business. In other jurisdictions, however, shares may not have an associated par value at all. Such stock is often called non-par stock. Shares represent a fraction of ownership in a business. A business may declare different types (*classes*) of shares, each having distinctive ownership rules, privileges, or share values.

Ownership of shares is documented by issuance of a stock certificate. A stock certificate is a legal document that specifies the amount of shares owned by the shareholder, and other specifics of the shares, such as the par value, if any, or the class of the shares.

Used in the plural, *stocks* is often used as a synonym for *shares*.^[1] Traditionalist demands that the plural *stocks* be used only when referring to stock of more than one company are rarely heard nowadays.

In the United Kingdom, South Africa, and Australia, *stock* can also refer to completely different financial instruments such as government bonds or, less commonly, to all kinds of marketable securities.^[2]

Types of stock

Stock typically takes the form of shares of either common stock or preferred stock. As a unit of ownership, common stock typically carries voting rights that can be exercised in corporate decisions. Preferred stock differs from common stock in that it typically does not carry voting rights but is legally entitled to receive a certain level of dividend payments before any dividends can be issued to other shareholders.^{[3][4]} Convertible preferred stock is preferred stock that includes an option for the holder to convert the preferred shares into a fixed number of common shares, usually anytime after a predetermined date. Shares of such stock are called "convertible preferred shares" (or "convertible preference shares" in the UK)

New equity issues may have specific legal clauses attached that differentiate them from previous issues of the issuer. Some shares of common stock may be issued without the typical voting rights, for instance, or some shares may have special rights unique to them and issued only to certain parties. Often, new issues that have not been registered with a securities governing body may be restricted from resale for certain periods of time.

Preferred stock may be hybrid by having the qualities of bonds of fixed returns and common stock voting rights. They also have preference in the payment of dividends over preferred stock and also have been given preference at the time of liquidation over common stock. They have other features of accumulation in dividend.

Stock derivatives

For more details on this topic, see equity derivative.

A stock derivative is any financial instrument which has a value that is dependent on the price of the underlying stock. Futures and options are the main types of derivatives on stocks. The underlying security may be a stock index or an individual firm's stock, e.g. single-stock futures.

Stock futures are contracts where the buyer is long, i.e., takes on the obligation to buy on the contract maturity date, and the seller is short, i.e., takes on the obligation to sell. Stock index futures are generally not delivered in the usual manner, but by cash settlement.

A stock option is a class of option. Specifically, a call option is the right (*not* obligation) to buy stock in the future at a fixed price and a put option is the right (*not* obligation) to sell stock in the future at a fixed price. Thus, the value of a stock option changes in reaction to the underlying stock of which it is a derivative. The most popular method of valuing stock options is the Black Scholes model.^[5] Apart from call options granted to employees, most stock options are transferable.

During Roman times, the empire contracted out many of its services to private groups called publicani. Shares in publicani were called "socii" (for large cooperatives) and "particulae" which were analogous to today's Over-The-Counter shares of small companies. Though the records available for this time are incomplete, Edward Chancellor states in his book *Devil Take the Hindmost* that there is some evidence that a speculation in these shares became increasingly widespread and that perhaps the first ever speculative bubble in "stocks" occurred.

The first company to issue shares of stock after the Middle Ages was the Dutch East India Company in 1606. The innovation of joint ownership made a great deal of Europe's economic growth possible following the Middle Ages. The technique of pooling capital to finance the building of ships, for example, made the Netherlands a maritime superpower. Before adoption of the joint-stock corporation, an expensive venture such as the building of a merchant ship could be undertaken only by governments or by very wealthy individuals or families.

Economic historians find the Dutch stock market of the 1600s particularly interesting: there is clear documentation of the use of stock futures, stock options, short selling, the use of credit to purchase shares, a speculative bubble that crashed in 1695, and a change in fashion that unfolded and reverted in time with the market (in this case it was headresses instead of hemlines). Dr. Edward Stringham also noted that the uses of practices such as short selling continued to occur during this time despite the government passing laws against it. This is unusual because it shows individual parties fulfilling contracts that were not legally enforceable and where the parties involved could incur a loss. Stringham argues that this shows that contracts can be created and enforced without state sanction or, in this case, in spite of laws to the contrary.^{[6][7]}

Shareholder

A **shareholder** (or *stockholder*) is an individual or company (including a corporation) that legally owns one or more shares of stock in a joint stock company. Both private and public traded companies have shareholders. Companies listed at the stock market are expected to strive to enhance shareholder value.

Shareholders are granted special privileges depending on the class of stock, including the right to vote on matters such as elections to the board of directors, the right to share in distributions of the company's income, the right to purchase new shares issued by the company, and the right to a company's assets during a liquidation of the company. However, shareholder's rights to a company's assets are subordinate to the rights of the company's creditors.

Shareholders are considered by some to be a partial subset of stakeholders, which may include anyone who has a direct or indirect equity interest in the business entity or someone with even a non-pecuniary interest in a non-profit organization. Thus it might be common to call volunteer contributors to an association stakeholders, even though they are not shareholders.

Although directors and officers of a company are bound by fiduciary duties to act in the best interest of the shareholders, the shareholders themselves normally do not have such duties towards each other.

However, in a few unusual cases, some courts have been willing to imply such a duty between shareholders. For example, in California, USA, majority shareholders of closely held corporations have a duty to not destroy the value of the shares held by minority shareholders.

The largest shareholders (in terms of percentages of companies owned) are often mutual funds, and, especially, passively managed exchange-traded funds.

Application

The owners of a company may want additional capital to invest in new projects within the company. They may also simply wish to reduce their holding, freeing up capital for their own private use.

By selling shares they can sell part or all of the company to many part-owners. The purchase of one share entitles the owner of that share to literally share in the ownership of the company, a fraction of the decision-making power, and potentially a fraction of the profits, which the company may issue as dividends.

In the common case of a publicly traded corporation, where there may be thousands of shareholders, it is impractical to have all of them making the daily decisions required to run a company. Thus, the shareholders will use their shares as votes in the election of members of the board of directors of the company.

In a typical case, each share constitutes one vote. Corporations may, however, issue different classes of shares, which may have different voting rights. Owning the majority of the shares allows other shareholders to be out-voted - effective control rests with the majority shareholder (or shareholders acting in concert). In this way the original owners of the company often still have control of the company.

Shareholder rights

Although ownership of 50% of shares does result in 50% ownership of a company, it does not give the shareholder the right to use a company's building, equipment, materials, or other property. This is because the company is considered a legal person, thus it owns all its assets itself. This is important in areas such as insurance, which must be in the name of the company and not the main shareholder.

In most countries, boards of directors and company managers have a fiduciary responsibility to run the company in the interests of its stockholders. Nonetheless, as Martin Whitman writes:

...it can safely be stated that there does not exist any publicly traded company where management works exclusively in the best interests of OPMI [Outside Passive Minority Investor] stockholders. Instead, there are both "communities of interest" and "conflicts of interest" between stockholders (principal) and management (agent). This conflict is referred to as the principal/agent problem. It would be naive to think that any management would forgo management compensation, and management entrenchment, just because some of these management privileges might be perceived as giving rise to a conflict of interest with OPMIs.^[10]

Even though the board of directors runs the company, the shareholder has some impact on the company's policy, as the shareholders elect the board of directors. Each shareholder typically has a percentage of votes equal to the percentage of shares he or she owns. So as long as the shareholders agree that the management (agent) are performing poorly they can elect a new board of directors which can then hire a new management team. In practice, however, genuinely contested board elections are rare. Board candidates are usually nominated by insiders or by the board of the directors themselves, and a considerable amount of stock is held and voted by insiders.

Owning shares does not mean responsibility for liabilities. If a company goes broke and has to default on loans, the shareholders are not liable in any way. However, all money obtained by converting assets into cash will be used to repay loans and other debts first, so that shareholders cannot receive any money unless and until creditors have been paid (most often the shareholders end up with nothing).

Means of financing

Financing a company through the sale of stock in a company is known as equity financing. Alternatively, debt financing (for example issuing bonds) can be done to avoid giving up shares of ownership of the company.

Unofficial financing known as trade financing usually provides the major part of a company's working capital (day-to-day operational needs).

The shares of a company may in general be transferred from shareholders to other parties by sale or other mechanisms, unless prohibited. Most jurisdictions have established laws and regulations governing such transfers, particularly if the issuer is a publicly-traded entity.

The desire of stockholders to trade their shares has led to the establishment of stock exchanges. A stock exchange is an organization that provides a marketplace for trading shares and other derivatives and financial products. Today, investors are usually represented by stock brokers who buy and sell shares of a wide range of companies on the exchanges. A company may list its shares on an exchange by meeting and maintaining the listing requirements of a particular stock exchange. In the United States, through the inter-market quotation system, stocks listed on one exchange can also be traded on other participating exchanges, including the Electronic Communication Networks (ECNs), such as Archipelago or Instinet.

Many large non-U.S. companies choose to list on a U.S. exchange as well as an exchange in their home country in order to broaden their investor base. These companies must maintain a block of shares at a bank in the US, typically a certain percentage of their capital. On this basis, the holding bank establishes American Depositary Shares and issues an American Depositary Receipt (ADR) for each share a trader acquires. Likewise, many large U.S. companies list their shares at foreign exchanges to raise capital abroad.

Small companies that do not qualify and cannot meet the listing requirements of the major exchanges may be traded *over the counter* (OTC) by an off-exchange mechanism in which trading occurs directly between parties. The major OTC markets in the United States are the electronic quotation systems OTC Bulletin Board (OTCBB) and the Pink OTC Markets (*Pink Sheets*) where individual retail investors are also represented by a brokerage firm and the quotation service's requirements for a company to be listed are minimal. Shares of companies in bankruptcy proceeding are usually listed by these quotation services after the stock is delisted from an exchange.

Buying

There are various methods of buying and financing stocks. The most common means is through a stock broker. Whether they are a full service or discount broker, they arrange the transfer of stock from a seller to a buyer. Most trades are actually done through brokers listed with a stock exchange.

There are many different stock brokers from which to choose, such as full service brokers or discount brokers. The full service brokers usually charge more per trade, but give investment advice or more personal service; the discount brokers offer little or no investment advice but charge less for trades. Another type of broker would be a bank or credit union that may have a deal set up with either a full service or discount broker.

There are other ways of buying stock besides through a broker. One way is directly from the company itself. If at least one share is owned, most companies will allow the purchase of shares directly from the company through their investor relations departments. However, the initial share of stock in the company will have to be obtained through a regular stock broker. Another way to buy stock in companies is through Direct Public Offerings which are usually sold by the company itself. A direct public offering is an initial public offering in which the stock is purchased directly from the company, usually without the aid of brokers.

When it comes to financing a purchase of stocks there are two ways: purchasing stock with money that is currently in the buyer's ownership, or by buying stock on margin. Buying stock on margin means buying stock with money borrowed against the stocks in the same account. These stocks, or collateral, guarantee that the buyer can repay the loan; otherwise, the stockbroker has the right to sell the stock (collateral) to repay the borrowed money. He can sell if the share price drops below the margin requirement, at least 50% of the value of the stocks in the account. Buying on margin works the same way as borrowing money to buy a car or a house, using the car or house as collateral. Moreover, borrowing is not free; the broker usually charges 8-10% interest.

Selling

Selling stock is procedurally similar to buying stock. Generally, the investor wants to buy low and sell high, if not in that order (short selling); although a number of reasons may induce an investor to sell at a loss, e.g., to avoid further loss.

As with buying a stock, there is a transaction fee for the broker's efforts in arranging the transfer of stock from a seller to a buyer. This fee can be high or low depending on which type of brokerage, full service or discount, handles the transaction.

After the transaction has been made, the seller is then entitled to all of the money. An important part of selling is keeping track of the earnings. Importantly, on selling the stock, in jurisdictions that have them, capital gains taxes will have to be paid on the additional proceeds, if any, that are in excess of the cost basis.

Stock price fluctuations

The price of a stock fluctuates fundamentally due to the theory of supply and demand. Like all commodities in the market, the price of a stock is sensitive to demand. However, there are many factors that influence the demand for a particular stock. The field of fundamental analysis and technical analysis attempt to understand market conditions that lead to price changes, or even predict future price levels. A recent study^[11] shows that customer satisfaction, as measured by the American Customer Satisfaction Index (ACSI), is significantly correlated to the market value of a stock. Stock price may be influenced by analyst's business forecast for the company and outlooks for the company's general market segment.

Share price determination

At any given moment, an equity's price is strictly a result of supply and demand. The supply is the number of shares offered for sale at any one moment. The demand is the number of shares investors wish to buy at exactly that same time. The price of the stock moves in order to achieve and maintain equilibrium.

When prospective buyers outnumber sellers, the price rises. Eventually, sellers attracted to the high selling price enter the market and/or buyers leave, achieving equilibrium between buyers and sellers. When sellers outnumber buyers, the price falls. Eventually buyers enter and/or sellers leave, again achieving equilibrium.

Thus, the value of a share of a company at any given moment is determined by all investors voting with their money. If more investors want a stock and are willing to pay more, the price will go up. If more investors are selling a stock and there aren't enough buyers, the price will go down.

- Note: "For Nasdaq-listed stocks, the price quote includes information on the bid and ask prices for the stock."

Of course, that does not explain how people decide the maximum price at which they are willing to buy or the minimum at which they are willing to sell. In professional investment circles the efficient market hypothesis (EMH) continues to be popular, although this theory is widely discredited in academic and professional circles. Briefly, EMH says that investing is overall (weighted by a Stdev) rational; that the price of a stock at any given moment represents a rational evaluation of the known information that might bear on the future value of the company; and that share prices of equities are priced *efficiently*, which is to say that they represent accurately the expected value of the stock, as best it can be known at a given moment. In other words, prices are the result of discounting expected future cash flows.

The EMH model, if true, has at least two interesting consequences. First, because financial risk is presumed to require at least a small premium on expected value, the return on equity can be expected to be slightly greater than that available from non-equity investments: if not, the same rational calculations would lead equity

investors to shift to these safer non-equity investments that could be expected to give the same or better return at lower risk. Second, because the price of a share at every given moment is an "efficient" reflection of expected value, then—relative to the curve of expected return—prices will tend to follow a random walk, determined by the emergence of information (randomly) over time. Professional equity investors therefore immerse themselves in the flow of fundamental information, seeking to gain an advantage over their competitors (mainly other professional investors) by more intelligently interpreting the emerging flow of information (news).

The EMH model does not seem to give a complete description of the process of equity price determination. For example, stock markets are more volatile than EMH would imply. In recent years it has come to be accepted that the share markets are not perfectly efficient, perhaps especially in emerging markets or other markets that are not dominated by well-informed professional investors.

Another theory of share price determination comes from the field of Behavioral Finance. According to Behavioral Finance, humans often make irrational decisions—particularly, related to the buying and selling of securities—based upon fears and misperceptions of outcomes. The irrational trading of securities can often create securities prices which vary from rational, fundamental price valuations. For instance, during the technology bubble of the late 1990s (which was followed by the dot-com bust of 2000-2002), technology companies were often bid beyond any rational fundamental value because of what is commonly known as the "greater fool theory". The "greater fool theory" holds that, because the predominant method of realizing returns in equity is from the sale to another investor, one should select securities that they believe that someone else will value at a higher level at some point in the future, without regard to the basis for that other party's willingness to pay a higher price. Thus, even a rational investor may bank on others' irrationality.

Arbitrage trading

When companies raise capital by offering stock on more than one exchange, the potential exists for discrepancies in the valuation of shares on different exchanges. A keen investor with access to information about such discrepancies may invest in expectation of their eventual convergence, known as arbitrage trading. Electronic trading has resulted in extensive price transparency (efficient market hypothesis) and these discrepancies, if they exist, are short-lived and quickly equilibrated.

Stock valuation

In financial markets, there are several methods used to calculate theoretical values of companies and their stocks. The main use of these methods is to predict future market prices, or more generally **potential market prices**, and thus to profit from price movement – stocks that are judged *undervalued* (with respect to their theoretical value) are bought, while stocks that are judged *overvalued* are sold, in the expectation that undervalued stocks will, on the whole, rise in value, while overvalued stocks will, on the whole, fall.

In the view of fundamental analysis, stock valuation based on fundamentals aims to give an estimate of their intrinsic value of the stock, based on predictions of the future cash flows and profitability of the business. Fundamental analysis may be replaced or augmented by market criteria – what the market will pay for the stock, without any necessary notion of intrinsic value. These can be combined as "predictions of future cash flows/profits (fundamental)", together with "what will the market pay for these profits?". These can be seen as "supply and demand" sides – what underlies the supply (of stock), and what drives the (market) demand for stock?

In the view of others, such as John Maynard Keynes, stock valuation is not a *prediction* but a *convention*, which serves to facilitate investment and ensure that stock are liquid, despite being underpinned by an illiquid business and its illiquid investments, such as factories.

Fundamental criteria (fair value)

The most theoretically sound **stock valuation method**, called income valuation or the discounted cash flow (DCF) method, involves **discounting of the profits** (dividends, earnings, or cash flows) the stock will bring to the stockholder in the foreseeable future, and a final value on disposition.^[1] The discounted rate normally includes a risk premium which is commonly based on the capital asset pricing model.

Approximate valuation approaches

Average growth approximation: Assuming that two stocks have the same earnings growth, the one with a lower P/E is a better value. The P/E method is perhaps the most commonly used valuation method in the stock brokerage industry.^{[2][3][citation needed]} By using comparison firms, a target price/earnings (or P/E) ratio is selected for the company, and then the future earnings of the company are estimated. The valuation's fair price is simply estimated earnings times target P/E. This model is essentially the same model as Gordon's model, if k-g is estimated as the dividend payout ratio (D/E) divided by the target P/E ratio.

Constant growth approximation: The Gordon model or *Gordon's growth model*^[4] is the best known of a class of discounted dividend models. It assumes that dividends will increase at a constant growth rate (less than the discount rate) forever. The valuation is given by the formula:

$$P = D \cdot \sum_{i=1}^{\infty} \left(\frac{1+g}{1+k} \right)^i = D \cdot \frac{1+g}{k-g}$$

and the following table defines each symbol:

Symbol	Meaning	Units
<i>P</i>	<i>estimated stock price</i>	\$ or € or £
<i>D</i>	<i>last dividend paid</i>	\$ or € or £
<i>k</i>	<i>discount rate</i>	%
<i>g</i>	<i>the growth rate of the dividends</i>	%

Limited high-growth period approximation: When a stock has a significantly higher growth rate than its peers, it is sometimes assumed that the earnings growth rate will be sustained for a short time (say, 5 years), and then the growth rate will revert to the mean. This is probably the most rigorous approximation that is practical.^[5]

While these DCF models are commonly used, the uncertainty in these values is hardly ever discussed. Note that the models diverge for $k = g$ and hence are extremely sensitive to the difference of dividend growth to discount factor. One might argue that an analyst can justify any value (and that would usually be one close to the current price supporting his call) by fine-tuning the growth/discount assumptions.

Market criteria (potential price)

Some feel that if the stock is listed in a well organized stock market, with a large volume of transactions, the listed price will be close to the estimated fair value.^[citation needed] This is called the efficient market hypothesis.

On the other hand, studies made in the field of behavioral finance tend to show that deviations from the fair price are rather common, and sometimes quite large.

Thus, in addition to fundamental economic criteria, market criteria also have to be taken into account market-based valuation. Valuing a stock is not only to estimate its fair value, but also to determine its **potential price range**, taking into account market behavior aspects. One of the behavioral valuation tools is the stock image, a coefficient that bridges the theoretical fair value and the market price.

Keynes's view

In the view of noted economist John Maynard Keynes, stock valuation is not an *estimate* of the fair value of stocks, but rather a *convention*, which serves to provide the necessary stability and liquidity for investment, so long as the convention does not break down.^[6]

Certain classes of investment are governed by the average expectation of those who deal on the Stock Exchange as revealed in the price of shares, rather than by the genuine expectations of the professional entrepreneur. How then are these highly significant daily, even hourly, revaluations of existing investments carried out in practice?

In practice, we have tacitly agreed, as a rule, to fall back on what is, in truth, a convention. The essence of this convention – though it does not, of course, work out so simply – lies in assuming that the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change.

Nevertheless the above conventional method of calculation will be compatible with a considerable measure of continuity and stability in our affairs, so long as we can rely on the maintenance of the convention. ...

Thus investment becomes reasonably 'safe' for the individual investor over short periods, and hence over a succession of short periods however many, if he can fairly rely on there being no breakdown in the convention and on his therefore having an opportunity to revise his judgment and change his investment, before there has been time for much to happen. Investments which are 'fixed' for the community are thus made 'liquid' for the individual.

On-line valuation calculators

- InValueAble.net: Free stock valuation site using full financial statement approach to calculate intrinsic value. Sign-in required.
- <http://www.moneychimp.com/articles/valuation/dcf.htm>: Discounted Cash Flows Calculator that assumes that a higher growth can be sustained for a limited number of years.
- <http://intelligentinvesting.googlepages.com/DCF.xls>: A DCF spreadsheet that allows different growth rates to be specified for years 1, 2 to 4, 5 to 7 and 8 to 10.
- Baseline evaluation: Automatically fetches baseline data for popular stocks. Allows valuation with different assumptions like variable excess return period.
- Public Company Valuations: Free discounted cash flow (DCF) valuation tool for major listed companies.
- Behavioral stock pricer.

Stock and flow

Economics, business, accounting, and related fields often distinguish between quantities which are **stocks** and those which are **flows**; these differ in their units of measurement. A *stock* variable is measured at one specific time, and represents a quantity existing at that point in time, which may have been accumulated in the past. A *flow* variable is measured over an interval of time. Therefore a flow would be measured *per unit of time*.

For example, U.S. nominal gross domestic product refers to a total number of dollars spent during a specific time period, such as a year. Therefore it is a flow variable, and has units of dollars/year. In contrast, the U.S. nominal capital stock is the total value, in dollars, of equipment, buildings, inventories, and other real assets in the U.S. economy, and has units of dollars. The diagram provides an intuitive illustration of how the *stock* of capital currently available is increased by the *flow* of new investment and depleted by the *flow* of depreciation.

Stocks and flows in accounting

Thus, a stock refers to the value of an asset at a balance date (or point in time), while a flow refers to the total value of transactions (sales or purchases, incomes or expenditures) during an accounting period. If the flow value of an economic activity is divided by the average stock value during an accounting period, we obtain a measure of the number of turnovers (or rotations) of a stock in that accounting period. Some accounting entries are normally always represented as a flow (e.g. profit or income), while others may be represented both as a stock or as a flow (e.g. capital).

A person or country might have stocks of money, financial assets, liabilities, wealth, real means of production, capital, and human capital (or labor power). Flow magnitudes besides those shown in the diagram include income, spending, saving, debt repayment, labor, or stocks averaged over a unit of time, such as the money in circulation per year.

Comparing stocks and flows

Stocks and flows have different units and are thus not *commensurable* – they cannot be meaningfully *compared, equated, added, or subtracted*. However, one may meaningfully take *ratios* of stocks and flows, or multiply or divide them. This is a point of some confusion in economics, as some confuse taking ratios (valid) with comparing (invalid).

The ratio of a stock over a flow has units of $(\text{units})/(\text{units}/\text{time}) = \text{time}$. For example, the debt to GDP ratio has units of years (as GDP is generally GDP per year), which yields the interpretation of the debt to GDP ratio as "number of years to pay off all debt, assuming all GDP devoted to debt repayment".

A confusing point is that fixing a standard increment of time allows one to convert a flow to a stock, by multiplying by (time); in calculus terms, integrating over time. For example, the total US GDP in 2000 has units of dollars. Thus in ratios of stocks to flows, the time dimension is often eliminated and the ratio expressed as a percentage (a dimensionless quantity).

More general uses

Stocks and flows also have natural meanings in many contexts outside of business and its related fields. Thus stocks and flows are the basic building blocks of system dynamics models. Jay Forrester originally referred to them as "levels" (for stocks) and "rates" (for flows).

A **stock** (or "level variable") in this broader sense is some entity that is accumulated over time by inflows and/or depleted by outflows. Stocks can only be changed via flows. Mathematically a stock can be seen as an accumulation or integration of flows over time - with outflows subtracting from the stock. Stocks typically have a certain value at each moment of time - e.g. the number of population at a certain moment.

A **flow** (or "rate") changes a stock over time. Usually we can clearly distinguish inflows (adding to the stock) and outflows (subtracting from the stock). Flows typically are measured over a certain interval of time - eg. the number of births over a day or month.

Examples

Accounting, finance, etc.

"Stock"	Possible units of stock	"Inflow(s)"	"Outflow(s)"	Possible units of flow
bank balance	euros	deposits interest	withdrawals	euros per month

inventory of lumber	board feet	incoming lumber	outgoing lumber	board feet per week
Housing stock	dollars	housing investment	housing depreciation	dollars per year
equity shareholdings	shares (of 'stock')	purchases of shares	sales of shares	shares per month

Other contexts

"Stock"	Possible units of stock	"Inflow(s)"	"Outflow(s)"	Possible units of flow
CO2 in atmosphere	tons	tons emitted	tons sequestered	tons per day
guests in a hotel	persons	guests arriving	guests leaving	persons per day
population	persons	births immigration	deaths emigration	persons per year
water in bathtub	liters	water pouring in	water draining out	liters per second
waste in disposal site	tons	dumping waste	decay of waste	tons per week
fuel tank	gallons	refueling	fuel consumption	gallons per month

Calculus interpretation

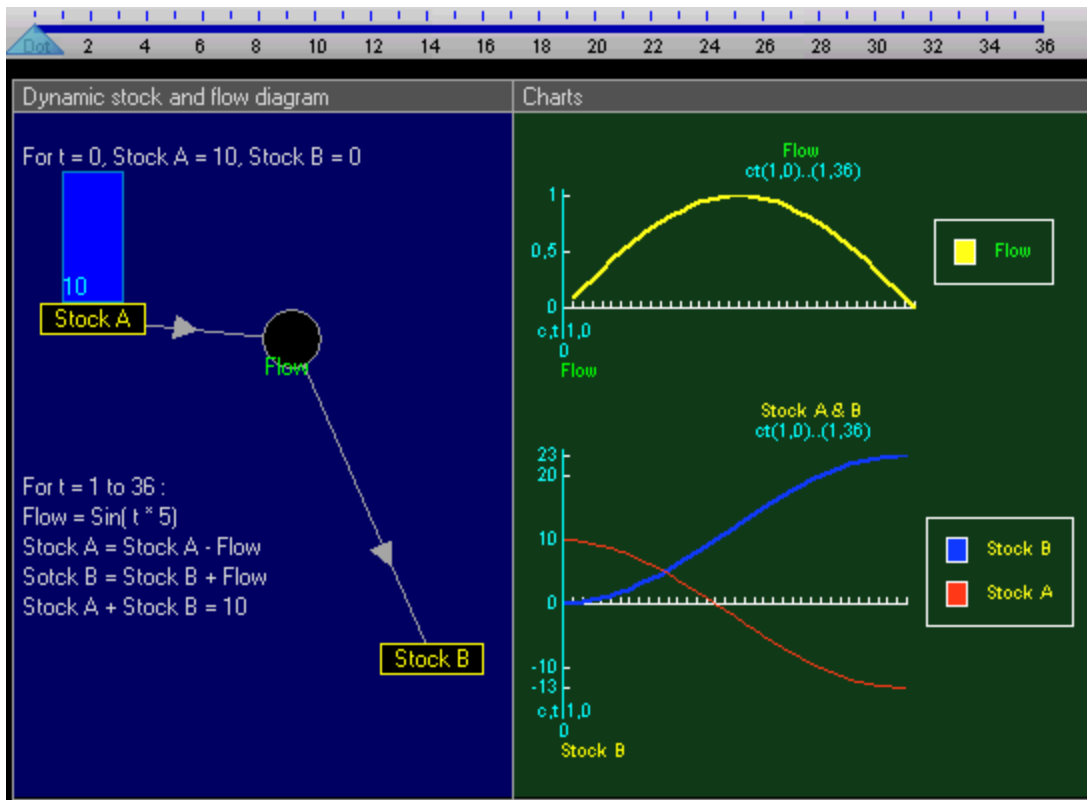
If the quantity of some *stock* variable at time t is $Q(t)$, then the derivative $\frac{dQ(t)}{dt}$ is the *flow* of changes in the stock. Likewise, the *stock* is the integral of the *flow*.

For example, if the capital stock $K(t)$ is increased gradually over time by a flow of gross investment $I^g(t)$ and decreased gradually over time by a flow of depreciation $D(t)$, then the change in the capital stock is given by

$$\frac{dK(t)}{dt} = I^g(t) - D(t) = I^n(t)$$

Here we used the notation $I^n(t)$ to refer to net investment, which is defined as the difference between gross investment and depreciation.

[edit] Example of dynamic stock and flow diagram



Dynamic stock and flow diagram

Time	Stock A	Flow	Stock B
0	10,00	0,00	0,00
1	9,912844	0,087156	0,087156
2	9,739196	0,173648	0,260804
3	9,480377	0,258819	0,519623
4	9,138357	0,34202	0,861643
5	8,715739	0,422618	1,284261
6	8,215739	0,50	1,784261
7	7,642163	0,573576	2,357837
8	6,999375	0,642788	3,000625
9	6,292268	0,707107	3,707732
10	5,526224	0,766044	4,473776

Ten first stocks and flow values

Equations that change the two stocks via the flow are:

$$\text{Stock A} = \int_0^t -\text{Flow} dt$$

$$\text{Stock B} = \int_0^t \text{Flow} dt$$

List of all the equations, in their order of execution in each time, from time = 1 to 36:

1) Flow = $\sin(t * 5)$

2.1) Stock A - = Flow

2.2) Stock B + = Flow

STORAGE AND HANDLING OF MATERIALS:

Too much storage entails unnecessary expenditure on rent, rates, heating, water and maintenance. Typically building and building services costs can be as 35% - 40% of total annual storage costs. While too little storage results in inefficiency due to un-suitable storage locations, methods and material flow.

General stores objectives:

- Most efficient use of space provided by the building cube.
- Rapid and easy access to stock
- Minimal travel distance of stock movements.
- Positive location and identification of stock.
- Grouping of products with similar storage characteristics and according to frequency of receipts and issues.
- Maximum protection and security of stores items.
- An orderly and efficient stores appearance.

Stores Layout:

Stores layout can be considered from the aspects of:

- Materials flow –
- Materials identification.
- Location and space utilization.

The two fundamental influences in stores are:

- The shape of the stores building.
- The type of 'flow' through out the building.

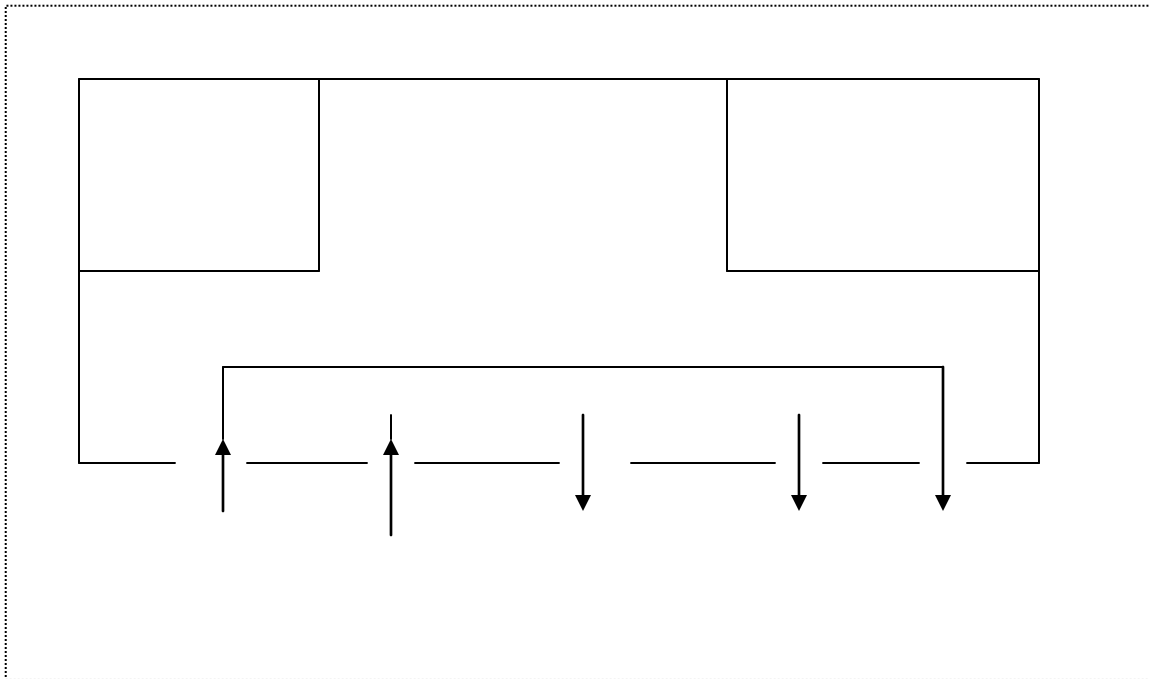
The Institute of Logistics' Publication Principles of Warehouse Design identifies four types of layout deriving from the above two factors.

a) The Inverted 'T' warehouse flow.

Characteristics:

- Goods in and goods out are on the same side of the building.
- Shape allow the use of 'high', 'medium' and 'low' usage to minimize materials handling by locating 'high' and 'low' usage areas respectively nearest to and furthest from the goods received and goods outward areas thus minimizing materials handling for high usage items.

Illustration: The inverted 'T' warehouse flow.



Advantages claimed for this layout include:

- Better utilization of receiving and issue areas and the associated mechanical handling equipment.
- The total area required is less than where there are separate loading and unloading areas.
- Unified by operations provide for better security control and easier surveillance. However, the center aisle may become congested in high throughput situations.

b) The Cross ‘flow’ warehouse’

The flow in this type of layout is a one-way system with an ‘in-feed’ aisle and a separate ‘out-flow’ from the other end of the racks. Front entry and dispatches use a common yard are and retains the benefits of the inverted ‘T’ approach.

Factors for the location and layout of stores/warehouse:

- (i) Consider the nature of materials to be stored i.e. are they raw materials, finished goods or hazardous materials.
- (ii) The quantity of materials to be used. The more the quantity, the larger the stores.
- (iii) Utilization of floor and airspace. The floor space and airspace should be utilized maximumly both horizontal and vertical.
- (iv) Possibility of future expansion. In case the need to expand arises there should be enough space to avoid shifting stores from one place to another or alteration of the layout.
- (v) Accessibility: The place in which to locate stores must be convenient to reach without difficulty, suppliers and other customers should be able to locate the stores with ease.
- (vi) The type of storage equipment to be used. The layout should take into consideration the type of aisles, bins and racks so as to minimize on the instances of accidents.
- (vii) Use of handling devices: Consideration should be given to how far the various equipment can be advantageously used to save labor and time in handling materials. E.g. in a finished goods store, pallets and conventional racks can be advantageously used.

- (viii) Security: Stores should be located in a place with adequate security i.e. they should not be located near walls to avoid instances of robbery, theft among other evils.
- (ix) Climatic conditions e.g. drainage of the area depending on the nature of materials stored.
- (x) Economic factors in terms of roads, utilities etc.

Materials – Handling:

Materials handling is a fairly high cost element, while it makes no contribution whatsoever to the value of the product. Since it cannot be avoided, enterprises strive to keep it to a minimum. It involves the transfer of goods to various storage places in the store and from there to the point of use (production process) between the stages in the production process and from the production process to the warehouse. It can therefore be regarded as the movement of goods over short distances.

Objectives of Materials – handling:

- Cost: Minimizing costs as much as possible by acquiring handling equipment with more uses. This is because the more uses a specific piece of equipment have the lower the cost of material handling.
- Capacity utilization: The equipment used in materials handling should be able to utilize space optimally i.e. length, width and height.
- Minimum handling: Limiting as far as possible the number of times goods have to be handled because this will reduce costs.
- Safety: eliminating repetitive and or manual handling of heavy goods and preventing damage to materials, ensuring safety of workers so as to ensure favorable working conditions.
- Service: Reacting or adopting quickly to changes in the production schedule and responding to the needs of customers as fast as possible.

Materials-handling equipments:

These include that which moves on the floor and that which moves overhead. Equipment that moves freely on the floor includes:

- Hand-driven equipment – which is used to transport small or light articles, e.g. trolleys.
- Tractors and trailers – which can transport heavier articles but require relatively large turning space.
- Forklifts – Can perform a variety of actions at a relatively low cost, one operator can work with a forklift to store or move around pallets where necessary.
- Conveyor belts – i.e. they are both gravity type where items are moved by mass and the power driven type.

Overhead materials – handling equipment include:

- Mobile crane – ideal for handling heavy materials in relatively high stores.
- Rails – designed to reach different areas. Containers normally hang from the rail which may be used for both incoming and outgoing movement.
- Lifts often electrically powered and may be planned for specific routes.

Removal of Waste Materials:

Scrap, waste or surplus materials are often seen in an extremely negative light because they are regarded as a sign of poor management. They are cost item for the enterprise because they increase the price of the final product which then places the enterprises competitiveness under threat. Waste or scrap or surplus materials cannot be avoided, however, although effort should be made to keep them to a minimum.

Sources of waste Materials:

In order to manage waste materials properly. It is essential to identify all possible sources thereof. The following general sources of waste materials can be identified.

(i) **Scrap in the production Process:**

This includes leftovers in the production process e.g. Small sizes or quantities of raw materials which are too little or small for any talk project or production process.

(ii) **Unusable or damaged supplies :**

These could be materials or components that are needed in the production process but do not meet the specifications or are below standard as far as quality is concerned. Breakages and obsolescence are additional source of unusable inventory.

(iii) **Purchasing excess inventory:**

This could be as a result of poor planning, incorrectly forecasting the demand for the products, economic reasons or because this is the company's policy. This may result in surpluses that have to be resold because of the danger of obsolescence, operating capital tied up in them.

iv) **Obsolete equipment:**

All equipment at a certain time becomes technologically obsolete or worn out and needs to be replaced.

(v) **Packaging Material**

Packaging material should be removed because it often takes up fairly large areas of storage space. However, suppliers are usually prepared to take back packaging material for remuneration.

Methods of removing Waste Materials:

Waste materials and equipment can be removed in different ways depending on the income or benefit that can be derived from the specific method. The following methods can be applied.

a. **Use within the enterprise :**

A list of surplus materials can be circulated in the enterprise and among its subsidiaries. Computer equipment is an example of old equipment that can easily be used in another place in the enterprise where the latest technology is not all that important.

b. **Processing within the enterprise:**

If the enterprise can process by-products more profitably and generate another more saleable product profitably, this is another alternative to removing surplus materials.

c. **Returning Surplus materials to the supplier:**

Surplus materials can also be returned to the supplier although this is done at a fee for the inconvenience caused.

d. **Selling to other users:**

Selling surplus to other users is often more profitable than selling to scrap dealers. The prices obtained will depend on the conditions of the materials and the availability of other sources.

e. **Selling to employees of the organization:**

Surplus materials that are in a good condition can be sold to employees if the policy of the organization allows this. However this may cause unhappiness among other staff members and the processing of such transactions may be a major administrative burden.

f. Donations to educational Institutions:

This is common with equipment such as computers, sewing machines, typewriters, etc.

Costs involved in removing waste materials:

- Transport costs
- Internal handling e.g. sorting apart and loading scrap.
- **Processing costs:** if the best alternative is to process the waste oneself.
- Direct labor e.g. operators for cranes and other equipment.
- Managers and supervisors involved in the removal of waste.

These cost elements should be weighed up against the possible revenue that can be generated from the scrap. If it can not be removed ‘profitably’, then alternative methods should be sought or an effort should be made to reduce the amount of future waste.

Reducing surplus materials:

Even surplus materials and waste appear to have been removed at a profit. It is better to keep them to a minimum because there will always be indirect costs that are not always taken into consideration e.g. the effect on the price of the product. There are a number of methods that can be used to reduce waste or surplus materials.

- Buy other or substitute materials including packaging that are easier to remove e.g. less dangerous substances or materials for which there is a market in recycling.
- Other methods of materials handling, maintenance and collection of waste can reduce surplus and waste or the cost of removal.
- Instead of removing technologically obsolete processes and equipment, modifications could possibly be made to satisfy new requirements and expectations.

SUPPLY CHAIN MANAGEMENT

The supply chain is not a chain of businesses with one to one business to business relationships, but a network of multiple businesses and relationships. Supply chain Management offers the opportunity to capture the synergy of intra-and inter- company integration and management. This is in a sense that SCM deal with total business process excellence and with other members of the supply chain. However, successful SCM requires cross functional integration and all management functions must play a critical role.

Definitions and concepts.

Supply chain (SC):

This refers to the network of activities required to get an item from raw material state where it is ready for consumption – in the hands of the final customers/consumers. Different items have different supply chains depending on the nature of operations of the firms where they pass.

Supply Chain Management (SCM):

This refers to the integration of the activities involved in the supply chain. It emphasizes a change from the traditional transactional management of organizations to a modern way of working together with suppliers the suppliers of suppliers, customers as well as the customers of customers.

Supply Chain Management requires organizations to work together through sharing benefits as well as risks. This can only optimize combined value for all the firms rather than some gaining at the expense of others.

c) The Through flow warehouse

In the through flow warehouse, goods inwards and outwards are on opposite sides of the building. All items must therefore travel the full length of the store. The layout also requires separate goods in and dispatch management with dual yard access and doubles the internal bay areas. The layout is useful where the goods in and out vehicle requirement is different such as in their platform height or the nature of the unit load warrants the separation of the two facilities.

However, this type of layout limits future extensions of the building.
From the above.

- The focus of traditional procurement /purchasing was between the focal company and the first tier suppliers (materials management).
- The interface between the focal company and the first tier customers is referred to as physical distribution.
- Materials management focuses on the focal company and all related functions that interact with materials. In other words materials management focuses on the internal supply chain (purchasing, stores, production, marketing and distribution).

As the chain continues further away from the focal company towards the end customers (one who buys for non commercial use). It is said to be moving down stream.

And as the chain continues further away from the focal company towards initial suppliers. It is said to be moving down stream.

The interface that covers the whole chain from initial suppliers to the final consumer is the focus of supply chain management.

Note: The ultimate source of revenue for every firm in the supply is the end/final consumer.

Of all 1st tier customers, 1 is the most important because he supplies to more 2nd tier customers. The implication is that he may require more attention than for example the first tier customer 2.

It is not advisable for 1st tier customer 1 to supply to the end customers because it creates competition between him and his customers. It is like a wholesaler selling to consumers yet he sells to retailers. Retailers would not be comfortable competing with the wholesaler, e.g. a company delivering its products directly to final consumers making it to compete with retailers.

All firms across the chain must release information to the chain for effective decision making.

Get the supply chain management processes and include them here.

SUPPLIER RELATIONSHIPS:

Relationships between buyer and seller are of significant importance that attention now focuses on achieving and monitoring the right relationship rather than simple performance measures.

Strategic Importance of supplier relationship:

The strategic importance of suppliers' relationships has got benefits such as:

- Cost reduction
- Access to technological development.
- Joint innovations
- Reduction in duplications
- Reduction in duplication of efforts (i.e. administration, quality checks).
- Waste reduction.
- Short lead times and a more focused supply chain.
- Partnership cooperation in which mutually profitable long term relationships between suppliers and their customers are sought based on openness and trust.

Different types of buyer – supplier relationship models.

Value	Importance	Category of relationship
Low	low	commodity purchasing
High	low preferred	preferred supplier
Low	High	preferred
High	High	partnership

The type of relationship with suppliers depends on the degree to which the competences of the suppliers and purchasers are complementary. Where they are complementary, the type of relationship is described as quest or vertical integration and it will be exercised by joint ventures or single sourcing or using a number of suppliers on a preferred basis.

Methods of improving buyer – supplier relationship:

There are several mechanisms for increasing supplier’s relationships. These include:

- Suppliers cooperative Association
- Cross transfer of staff
- One to one development
- Parallel sourcing

Suppliers cooperative Association:

It is based on trust, and sharing of business strategies. E.g. in engineering and cost information. They also require organizational change. A general definition is:

A mutually benefiting group of a company’s most important suppliers brought together on a regular basis, for the purpose of coordination and cooperation as well to assist the members to benefit. Or a group of companies linked together on a regular basis to share knowledge and experience in an open and cooperative manner.

Cross transfer of staff:

This can be permanent or temporary for cementing relationship between the buyers’ ad suppliers’ organizations e.g. to understand what exactly the buyer wants – system and relationship.

One to one development:

This involves working together to strengthen relationship with the emphasis on joint problem solving and mutual gain. This can be in the form of onsite training of suppliers, employees, individual suggestion directly to the sup[pliers and technical assistance.

Parallel sourcing

This is where two suppliers are selected to manufacture a part, and although the relationship of both is close, the threat of competition is ever resulting into good quality and better service delivery.

How to start improving suppliers/buyer relationship

- Examine your own motivation orientation
- Focus heavily on relationship issue.
- Conduct a carefully negotiations analysis before interacting with suppliers.
- Design procedure for pe-post negotiation interaction.

Supply chain management is not about minimizing the effectiveness and profitability of the individual units, whether factories/warehouses or transport flight, but optimizing the whole to achieve better service at lower cost with less industry. This can be done through commercial relationship. Until the early 1980's, the focus of purchasing/ procurement tended to be very much on the transaction aspect of the deal.

Suppliers were generally seen as adversaries. But more recently, organizations have begun to think of suppliers not as above but as potential partners and the supplier base as a source of competitive advantage advantages from which benefits could be harvested if the right relationships were established.

As organizations continue to downsize and concentrate on their core business or mission, external supplier inevitably has become more important and central to the achievement of corporative objectives.

Increased interest in suppliers' relationship:

The reasons for increased interest by organizations in suppliers' relationship include the following:

- Efforts to integrate supply chain to reduce costs.
- Realization of hidden costs as a result of poor relationship
- Growth of outsourcing practices.
- New types of relationship models in the commercial market.
- E-commerce and ICT changes in the relationship landscape.
- Higher value of trust in relationship
- Environment (green) issues and ethical relation.
- Government procurement changes.

a. Realization of hidden costs associated with poor relationship:

This arises in the absence of a trusting relationship. Both supplier and buyer try to hide information after long and arduous negotiations. Both parties will need to check order invoices and indeed the quality of goods received. This means extra costs for both parties in the relationship.

b. Efforts to integrate supply chain to reduce cost:

The supply chain management concept emphasizes that all organizations in the supply chain network stand to gain from cooperating or reducing costs and improving quality so that the final consumer is satisfied. In order to reduce waste in the supply chain, it is necessary for supply chain members to work more closely together to identify areas where there is duplication, excess inventory or supply bottlenecks. Closer integration i.e. often facilitated by information Communication Technology (ICT) solution and in order for ICT solutions too work effectively, all members of the supply chain must agree on some common standard for the benefit of all e.g.

- Reducing waste and non-value adding activities such as handling or excess inventory.
- Improving supply chain communication especially with regard to forecasting.
- Reducing the tie for new product development
- Coordinating better the efforts of all components, links in the supply chain.

c. Growth of out-sourcing Practices:

As organizations in both public and private sector continue to outsource more and more activities, managers will see their role change from being functional or departmental to being a contract or external resource manager.

d. New types of relationships in the commercial world:

The world over, competitors are forming alliances e.g. airline businesses are cooperating with the farmer competitors to have information, cut marketing and tracing costs and offer their customers a better and integrated service.

e. E-commerce and ICT changes:

New ICT tools and in particular the establishment of online industry, market places, trading exchanges means that closer cooperation is possible with suppliers contractors and even competitors.

f. Higher value of trust in relationship:

In the knowledge economy where intellectual and not physical property is the source of most wealth, trust becomes even more important between commercial parties.

g. Environmental (green) issues and ethical pressure:

It is impossible to make a chain for your organization to be green if your suppliers are not green. And ethical sourcing motives require cooperation with suppliers' partners.

More suppliers but fewer good ones:

Good suppliers are becoming hard to find in many sectors and smart buyers are seeking longer term relationships with those that are regarded /perceived to be world class.

h. Government procurement changes:

This is intended to ensure that public sector buyers concentrate more on developing close and mutual, beneficial relationships with suppliers.

Note: Good relationship requires among other things:

- Commitment – doing what you said will do
- Empathy
- Honesty
- Communication

Building such relationship takes time and effort.

Factors that determine the nature of relationship with suppliers:

(i) ABC Analysis: One simple way of determining which type of relationship to establish with a supplier is by looking at the ABC – analysis. This analysis is a technique whereby products/services (items) are divided into A, B and C categories. This technique differentiates between supplies on the basis of cost (money) and forms the input for supply strategy differentiation (how to deal with the different products/services purchased).

In other words, more attention should be given to a-category items than to those in the C-category. Each purchaser should be familiar with this model and use it as a starting point for any purchasing action and even for purchasing strategy.

(iii) The Kraljic purchasing portfolio approach (matrix).

An organization has certain needs with regard to external supply. Different products, services and items are purchased from the external market. Not one single product or service is the same, not one supplier is the same as another. It implies that we need to differentiate and this calls for product positioning depending on two factors. Spend and criticality of an item.

Relationship with suppliers is likely to differ depending upon which box the supplier or commodity purchase is placed. This is presented in a 2 by 2 matrix by Kraljic. Kraljic (1983), introduced the first comprehensive portfolio approach for the determination of a set of differentiated purchasing strategies.

The Kraljic purchasing portfolio matrix is a purchasing approach to manage supplier relationships. Its general idea is to minimize supply risk and make the most buying power. From this, the purchaser can consider how best to develop the relationship with the supplier.

Kraljic’s approach includes the construction of a portfolio matrix that classifies products on the basis of two dimensions profit impact and supply risk (“low” and “high”).

The Kraljic Matrix/Supply positioning model

High

<p>Leverage products</p> <p>-High impact of profits -No supply market constraints -Standard specifications</p>	<p>Strategic Products</p> <p>Your key purchases High volume Cost is vital Quality and availability is critical</p>
<p>Routine Products</p> <p>Low value items Many alternatives Routine purchases Majority of items are non essential products.</p>	<p>Bottleneck products</p> <p>Vulnerability high Delivery is fragile Need risk management Good planning is required Highly specialized.</p>

Expenditure /Relative cost

Low

Supply risk

High

The strength of the instrument is that it enables the purchaser to differentiate between the various supplier relations and strategies that are appropriate for each category. These are:

- Leverage items: hard bargaining, induce services
- Routine items: Reduce handling/overheads costs, try to cluster into leverage contracts.
- Strategic items: go for partnerships
- Bottleneck items: ensure supply.

Kraljic’s matrix categorizes the outcomes under four headings.

a. Strategic products:

These account for a high monetary value and also suffer supply risk, perhaps because of the small numbers of potential suppliers. These products are seen as being important over the long term to the organization and will

require long-term solutions and analysis such as a closer and more collaborative approach between organizations. Strategic products are core to the organization.

Strategic products are likely to be fundamental to differentiating the company's products or to achieve a cost advantage and can therefore be key contributors to profitability.

Examples can include components on which an end product depends, a key equipment based on new technology and designed on individual basis. Any deviation from required performance could affect the efficiency and effectiveness of the whole process.

b. Bottleneck products:

These are products identified as being crucial to maintain operations. These purchases may represent a relatively small proportion of total purchasing spend however, their non-availability can result into a very high risk. For example a spare part of a machine operations in the manufacturing plant. The role of purchasing is to secure continuity of supply and develop the business relationship accordingly. These products should be handled by volume insurance, vendor control and security of inventories and back up plans.

c. Routine /Non-critical products:

Such as lubricants, stationery can increasingly be handled by contracting out management of the day-to-day supply activates to specialist organization (outsourcing). After the initial contract is drawn up, the role of purchasing becomes one of monitoring and managing the contract. These products require efficient processing, product standardization, order volume and inventory optimization.

d. Leverage products:

These are also valuable in monetary terms but their supply risk is low reason being there are many suppliers in the market. They are similar to routine products only that they involve high expenditure compared to routine products.

These items allow the buying company to fully exploit its full purchasing power through tendering, target pricing, product substitution etc.

This category is a natural target for a competitive bidding approach and the main deciding factor is likely to be purchase price.

Leverage products (where the purchaser has 'leverage' over the supplier) will often lead to an adversarial approach where the purchaser is looking for the best possible price while considering delivery quality and other issues as secondary. This approach does not lead to long-term thinking but is designed to secure the required product that meets the specification at the most competitive price.

Organizations will use a matrix of relationships applicable to those identified in the Kraljic matrix. These different approaches allow the purchasing team to maximize their effectiveness by having the right approach to suppliers in the circumstances. However, the matrix requires regular monitoring and updating to ensure that the correct approach continues to be used.

Summary of supply Strategies:

Kraljic's strategies recommendations for the four portfolio categories are usually summarized into simple concepts like "efficient processing", "exploit power", "strategic partnership", and "volume insurance".

a. Strategic Commodities (strategic partnership)

Achieving total value through strategic sourcing/supply chain management can be possible through:

- Being supplied from one supplier
- Getting access to supplier's technology and expertise.
- Joint development: unique specifications
- Product differentiation (competitive edge).
- Multi-disciplinary competence teams
- Medium/long term detailed contracts (3-5 years)

Leverage commodities (exploit power):

Accruing returns through analysis can be possible through:

- Optimizing purchasing power – drive profit
- Managing supply market capacity – drive profit
- Purchasing for price reductions
- Standardizing specification – limited differentiation
- Stock holding at suppliers – use VMI (Vendor Managed inventory technique)
- Short/medium term contracts
- Maintain flexibility – consider multiple sourcing.

b. Bottleneck commodities (secure supply)

Strategic sourcing can be done by:

- Having a second source do not depend/rely on one supplier
- Ensuring supply so as to remove/minimize risks
- Using buyer's specification- seek substitutes
- Standardizing – reduce number of products
- Considering keeping stocks
- Carrying out normal negotiations – price is a lower priority
- Seeking alternative sources- encourage competition
- Preparing a contingency plan

c. Routine commodities (Efficient processing)

- ensure lean supply – minimize acquisition costs
- use industry standard specifications (catalogues)
- reduce supplier base –volume consolidation
- minimize attention – supplier does everything for the buyer
- automation – E-procurement
- negotiate discounts (on price lists)
- Consider outsourcing provision of these products.

How to start improving buyer /supplier relationship

Setting up of the buyer/supplier relationship on the first place is the first obstacle on the road towards sustainable relationship. This can be especially difficult if the purchasing and suppliers staff have been used to adversarial methods of negotiation.

The four key considerations for successful negotiations

1. Examine your own motivation orientation

Neither a cooperative nor a competitive orientation is appropriate for complex negotiation. Enlightened self interest is the orientation that develops quality agreement through its focus on interests, merits and results- know what you want from the negotiation.

2. Focus heavily on relationship issues

The traditional focus on substance and right based market must be complimented with – focus relationship issues when negotiating cooperative relationship. Many buyers focus on short-term financial /gain and thereby miss the opportunity to exploit long-term mutual gain through collaboration with suppliers.

3. Conduct a careful negotiation analysis before interacting with the supplier:

Establishing a cooperative relation tailored to the exchange needed and to the characteristics of partners requires the following analysis:

- (i) Examination of interests and issues
- (ii) The generation of options – what to give and what to take
 - Examine interests and issues
 - Coming up with options
 - Explore means of turning options into specific agreements
 - Evacuate alternatives to the agreement
- (iii) Design procedures for pre-negotiation and interaction. Given the potential complexity and predictability of cooperative supplier relationship, a buyer should:
 - Carefully consider the timing of interaction with potential suppliers.
 - Use well established negotiation procedure
 - Design procedures for handling future conflicts

Partnering:

A partnership is the most advanced form of relationship in management. Broersma (1991) defined it as: “the building of long-term relationships with a limited number of suppliers based on mutual trust”. Here the purchaser, supplier and other organizations involved in the supply chain work together to reduce total cost and improve the quality of the product or service. The aim is to adhere world-class standards so as to achieve both short and long-term goals.

Hendrick et al (1993), defined a ‘partner’ as a firm with whom your company has an ongoing buyer – seller relationship, involving a commitment over an extended time-period, a mutual sharing of information, risks and rewards resulting from the relationship.

“Partnership is the result of the buyers’ continuous effort to improve results in the relationship with suppliers, rather than a technique which can be adapted and applied in a short time.

The objective of this type of co-operation is to achieve improvements in:

- Cost
- Logistics
- Quality
- Product development

Critical success factors or variables required to sustain partnerships.

Critical success factors or variables that when properly sustained, maintained or managed will have a direct impact on one’s partnership and hence one’s shared vision. They affect the overall partnership and they include:

- Commitment - which is determined by the buying and sellers' organization top management.
- Communication – what exactly is needed in the relationship by looking at the service level agreement?
- Coordination of all transactions
- Motivation e.g. through sharing benefits and rewards
- Conflict management – how to resolve conflicts when they arise.
- Culture change – being adaptive to each other's culture.
- Participation among buyers and suppliers.

Why partnerships fail:

- Poor communication
- Low level of top management commitment
- Lack of TQ commitment by suppliers
- Lack of shared goals – these are derived from objectives of the relationship.
- Lack of benefit – risk sharing
- Ineffective mechanism of conflict resolution.

Conclusion:

Supplier – buyer relationship can be compared to a marriage relationship which involves long-term relationship.

- Developing a partnership with suppliers takes time. The road is long and difficult, there are no easy ways or short cuts to success.
- Cooperation with suppliers requires internal team work between all disciplines and yet companies still operate in a functional manner.

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