

# Storage and distribution

**Level 5 - 11**



# Session 1

The scope of storage and distribution



# Learning objectives

At the end of this session candidates will be able to:

- determine the scope and objectives of stores and distribution
- analyse and explain connections between distribution, storage and the supply chain
- develop effective and measurable service standards
- assess and evaluate the concept of adding value in stores and distribution
- analyse the problems associated with the area of service to cost trade-offs.



# Role of storage and distribution

- Role of storage and distribution in a typical business environment
- Differences between roles the activity has in different organisations
- Network of relationships required for the activity to function effectively



# Connections with the supply chain

- Total cost concept and the idea of sub-optimisation
- Total cost concept and why it is relevant
- Major areas that need to be evaluated in order to arrive at an optimal solution
- Cross-functional teamworking skills that need to be developed to avoid sub-optimisation problems



# Service standards

- Concept of the term customer in stores and distribution environments
- Methods that could be used to improve the internal and external customer interface
- Developing appropriate action plans to improve customer service
- Various measures of customer performance internally and externally
- Cost of service levels versus benefits



# Adding value

- Adding value in the service context with appropriate illustration
- Role of other functions internally and externally in helping to add value to the activity
- Appropriate measurement criteria in this area



# Added value

- Concept is that a product being given greater value by its supporting processes that make it more attractive
- May be by providing a faster supply chain.
- Addition of special wrapping to suit customers requirements
- Offering of alternative specifications for the product
- Developing new products to suit particular customer requirements
- Offering special promotional deals to encourage customers to order more products more often



# Added value

- One key point of adding value is to overcome the negative impression that distribution and logistics function only add cost
- Distribution can add value by the process of packaging products attractively also by breaking bulk
- Also specialist companies can provide added value to distribution



# Channel integration

(Dibb, Simkin, Pride & Ferrell 2000)

## Vertical

The combination of two or more stages of the channel under one management

## Horizontal

The combination of institutions at the same level of channel operation under one management



# Trade off's

- **Within distribution components** e.g. fixed v random storage
- **Between distribution components** – packaging v storage requirements
- **Between company functions** – optimal production runs v warehousing costs
- **Between the company and the external organisation** – direct delivery to store from manufacturer v delivery to distribution centre
- These type of trade-off's are at the heart of the total logistics concept

# Problems with service to cost trade-offs

- Major cost and service parameters that need to be evaluated in the stores and distribution area
- Developing an appropriate method of appraising such a problem
- Examining environmental factors that could have an impact in this area
- Assessing ways of quantifying costs and service in this area



# Service trade-off's

- For example when a customer demands special deliveries at an inconvenient time
- Need to decide if to take on the request or to refuse the job
- Balancing up if it is worth incurring the extra costs today in return for potential rewards tomorrow or to save on the cost today and forego potential future rewards



# Objectives of storage and distribution

Definition –

Supply and delivery of the right goods, to the right place at the right time in accordance with customer requirements and within an acceptable cost framework for the supplier



# Session 2

## Distribution planning



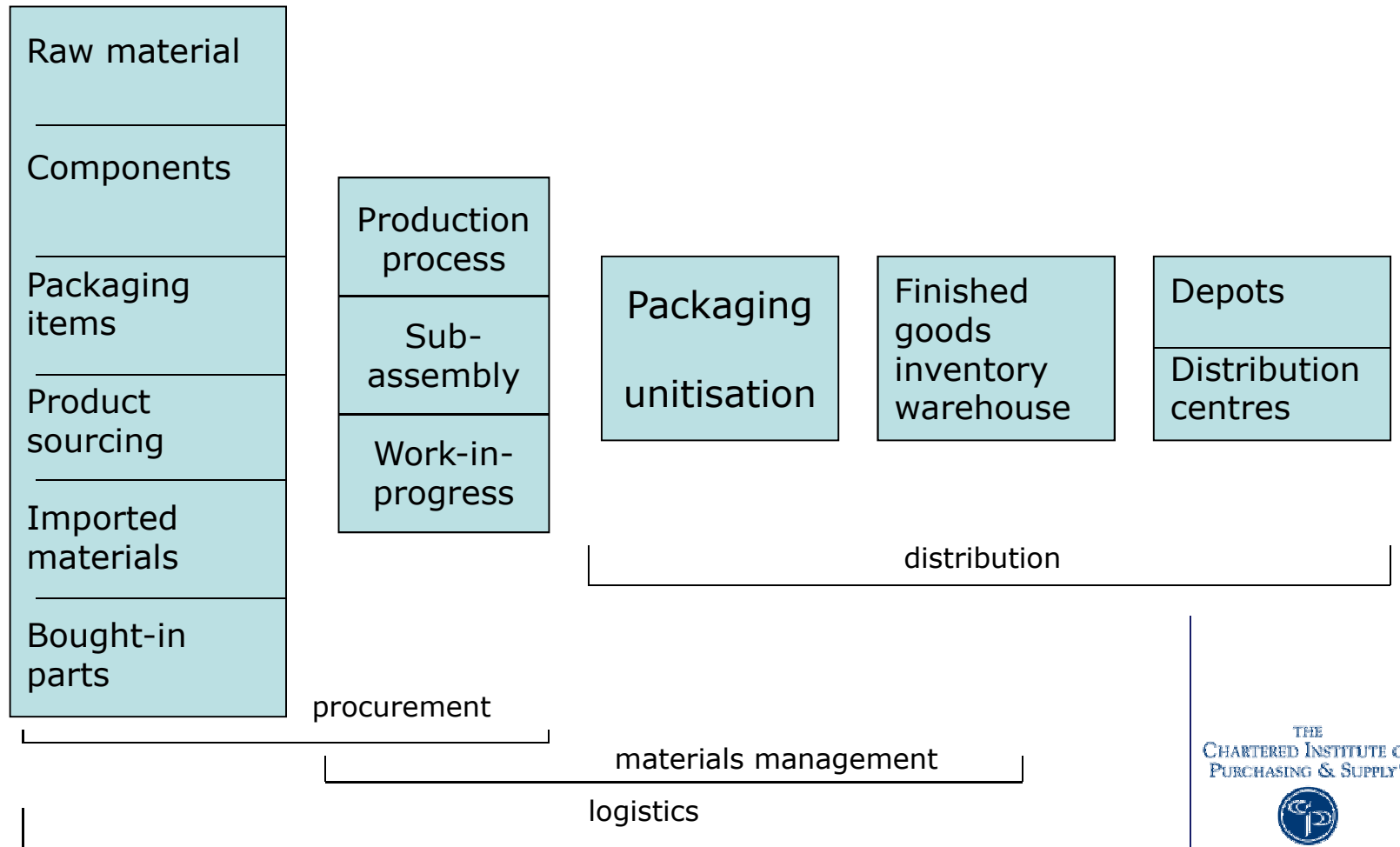
# Learning objectives

At the end of this session candidates will be able to:

- evaluation of macro-level factors affecting the choice of a storage and distribution network
- major methods of storage
- the concept of a distribution network
- current methodologies that could be used in this area to provide an optimal solution
- how you would evaluate the use of third party contractors and logistic service providers
- develop an appropriate action plan and methodology for such an exercise
- appropriate key performance indicators (KPI's) in the selection process
- the internal-external interfaces that would need to be consulted in such an exercise and why
- key stakeholders in this area.



# Key components of logistics



# Factors affecting the choice of distribution networks

- The nature of the distribution business
- The products being handled
- The markets to be served
- This will determine if:
  - The distribution network needs to be highly structured with regular services to major customers on a frequent basis
  - Orders are random and infrequent so that every weeks delivery plan is different



# Factors affecting the choice of distribution networks

The markets to be served may be:

- Local - for example countrywide
- Regional - for example the south east
- National - for example whole of the country
- International - European or global
- Knowledge of the markets will help to determine the distribution system. If it is to be in house or contracted out then other choices will also need to be made



# Factors affecting choice of storage and distribution networks

- Customer demands as to when and how deliveries should be made
- Compliance with the law
- Financial issues
- Health and safety issues



# Factors affecting the choice of distribution networks

Transport modes:

- small items may use a postal or courier service
- road services for local distribution
- road or road- rail services for national distribution
- road, road-rail or air services for EU distribution
- air or shipping services for global markets.



# Major methods of storage

- Bulk storage
- Loose item storage
- Pallet storage systems
- Small item storage
- Non-standard unit loads



# Reasons for using third party contractors

- Traditional arrangements seen to be failing
- Contracts take a lot of senior management's time to coordinate and review
- Inability to broaden service offering
- Increasing customer service requirements difficult to maintain
- Limited skills in planning
- Lack of network abilities internationally
- Lack of IT and change management abilities
- Contractors activity rather than value driven
- One-off savings made but not long-term cost reductions



# Selection process – third party providers

- Identify service required
- Identify potential service providers
- Request for information and short list
- Prepare invitation to tender and request for proposal or quotation
- Tender evaluation and comparison
- Contractor or partner selection
- The contract
- Implementation plan
- Contractor management



# Evaluating third party contractors and suppliers

- National/local or regional
- Dedicated or exclusive services or multi-user/shared services
- Specialist contractor in particular area of goods
- Joint venture
- Freight only

Depending on:

- nature of the business
- costs
- benefits
- contractual arrangements
- relationships.



# KPI's for third party contractors

- Correct treatment of customer orders
- Deliveries on time
- Reporting systems
- Monitoring of costs and budgets
- Feedback of statistical information



# Session 3

## Moving goods



# Learning objectives

At the end of this session candidates will be able to:

- differentiate between the various transport modes in terms of
  - the characteristics and suitability for different consignments
  - the concept of multi-modal transport and its advantages
  - the factors that need to be considered in vehicle routing
  - major factors that must be considered in load planning
  - appropriate computer generated models that could be used to assist in the areas of routing and load planning
- how appropriate KPI's could be developed in this area
- the associated problems with UK import control
- how the risks can vary with imports depending on the Incoterm chosen.



# Transport modes

- Road
- Rail
- Inland waterways
- Coastal, short sea and deep sea
- Air
- Inter-modal
- Pipelines



# Factors informing choice

- Domestic, Europe-wide, global
- Cost
- Suitability
- Availability
- Flexibility
- Speed
- Reliability
- Legislation
- Packaging and documentation



# Road freight – vehicle choice

- Fixed cost of vehicle
- Variable costs – tyres, maintenance, and so on
- Residual value
- Whole life costs
- Utilisation costs – miles per gallon, cost per mile
- Ways of acquiring – buy, hire, and so on.



# Multi-modal transport

- Combination of different transport modes (also known as inter-modal)
- Offers environmental and operational benefits
- Developing trend because of 'green' pressures



# Vehicle routing

Key considerations include –

- Demand data
- Distance factors
- Customer and service constraints
- Vehicle restrictions
- Driver constraints
- Route factors
- Product/unit load constraints



# Why use inter-modal transport

- Growing awareness that both environmental and operational objectives may be best served by using two or more individual transport modes
- This is the case where road operations have been combined with rail operations
- A number of logistics operators are now exploiting the green advantages of this mode



# Load planning

- Light loads
- Heavy loads
- Mixed loads
- Valuable loads
- Liquids and powder in bulk
- Hazardous loads



# Steps in manual routing

- Establish delivery date and parameters
- Determine geographic data
- Determine demand
- Determine customer drop constraints
- Allocate demand to geographic area
- Decide on geographic rules
- Plan trips
- Plan routes
- Calculate vehicle requirements and mileage
- Calculate delivery costs
- Calculate vehicle utilisation



# Computerised systems

- Computer systems for planning and scheduling – most systems allow both
- The essence of such systems lies in achieving the maximum number of deliveries within the minimum possible route mileage and constrained by driver working hours, receiving times and vehicle capacity
- All based on algorithms and iterations
- Often allows for the modelling of different scenarios
- Can be far quicker than an manual system although some companies use a hybrid system



# UK import control

- Customs controls
- Despatches in the EU
  - Pre-entry/pre-shipment declaration
  - Low-value procedure
  - Simplified clearance procedure
  - Local export control
  - Period entry (exports)
- Customs entry for non-EU imports
- Single administrative documents
- T-forms
- Carnets



# Risks with imports – incoterms

- Ex-works – maximum risk with buyer
- FCA
- FAS
- FOB
- CFR
- CIF
- CPT
- CIP
- DAF
- DES
- DEQ
- DDU
- DDP – maximum risk with seller



# Session 4

## Warehousing



# Learning objectives

At the end of this session candidates will be able to:

- appraise the role and effects of warehousing and storage of goods on the efficiency and effectiveness of the activity
- assess the different types of warehouses and equipment available
- evaluate different types of coding systems.



# Effectiveness and efficiency

- Appropriate methodologies for evaluating the cost and service requirements when designing the internal layout of a stores or warehouse
- Major principles to be evaluated in any warehouse or stores
- The different types of design and their associated advantages or disadvantages
- Single and multiple storey buildings and their cost effectiveness in different situations



# Warehouse and equipment

- The different types of warehouses and stores to be found in different organisations:
  - manufacturing v service
  - push/pull environments
  - public versus private sector
- the use of different types of storage and handling equipment found in a stores and warehousing environment
- methods for increasing the use of space in such areas
- how to evaluate cost implications in the use of different types of storage and handling equipment
- the use of Pareto analysis and stock-turn with respect to stock management.



# Desirable features of a warehouse

- Depend on the throughput of materials
- Forecasts of demand & estimates of space required for aisles and other areas can be used to calculate basic storage requirements
- Plus need to make provision for other facilities such as offices, toilets and canteens
- Software is available to help with designing warehouses



# Desirable features of a warehouse

- Absence of intrusive pillars, floor joints, variations in floor levels and excessive decorative features
- Securable windows
- Proximity to users or warehouse items
- Dry and well ventilated atmosphere
- Adequate access to roads and rail connections also access to seaports and airports if necessary
- Adequate loading & unloading facilities
- Durable floor surfaces
- Space for expansion
- Appropriate planning permission



# Desirable features of a warehouse

- Dedicated rationalised building design with maximum potential flexibility for use
- Adequate working ceiling height
- Space outside the warehouse area for offices
- Doors and loading bays which are adequate for access but capable of maintaining security
- Adequate and unobtrusive heating equipment
- Adequate and where possible natural lighting
- Adequate space for broad gangways
- Access to water for fire hoses



# Desirable features of a warehouse

- Acceptable rent and rates
- Appropriate compliance with building regulations
- Sound and robust walls
- Provision for ancillary services, for example, public transport and parking



# Increasing storage density

- **Block stacking** - loaded pallets placed directly on the floor and built up in stacks
- **Adjustable pallet racking (APR)** - rigid racking of adjustable height designed for pallets
- **Drive in racking** - pallet racking designed to allow access for FLT's
- **High rack narrow aisle racking** – uses narrower aisle than APR and special trucks increases storage density
- **High bay warehousing** – allows pallets to be stacked up to 30 metres using stacker cranes

# Equipment

- Manually operated mechanical handling equipment
- Lift trucks
- Reach trucks
- Tow trucks
- Tractors
- Conveyors



# Principles of stock positioning

- Popularity of demand – most frequently requested items are located conveniently for picking. Could be based on ABC analysis
- Similarity – storing similar goods together will make it easier to remember where items are located
- Size or weight – large or bulky items may be kept together
- Special characteristics – items with similar characteristics such as high value or inflammable can be kept together



# Coding systems

- The different types of coding systems to be found in a stores environment:
  - significant
  - sequential
- Self-validating codes
- Bar codes
- European Article Numbering (EAN)
- Interleaved 2 of 5
- Code 39
- UPC



# Benefits of coding systems

- Avoids repeated use of long titles
- Accurately identifies all items
- Prevents duplication of items
- Assists standardisation and reduction of varieties
- Provides a foundation for efficient purchasing
- Convenient basis for recording and storing documents
- Simplifies mechanical recording
- Convenient for central analysis of unit storehouse records
- Can be employed as a basis for stock control accounts
- Simplifies pricing and costing
- May be used as a storehouse location system



# Session 5

## Management of stock



# Learning objectives

At the end of this session candidates will be able to:

- assess the methods used in the introduction of new items and the handling of obsolete and redundant stock
- propose methods for handling customer returns and reverse logistics
- evaluate methods for managing unit loads, pallets, cages and tote boxes.



# New and obsolete items

- The introduction of new items needs to be managed
- Obsolete and redundant stock is likely to cause difficulties – problems need to be minimised
- Improved communications can reduce such problems
- Management information systems can be used to help control the problems associated with new introductions, obsolete and redundant stock



# New items

- Why are they required?
- Will there be a significant demand?
- Can the need be satisfied by an existing product?
- If the new item is accepted, will it replace an existing item?
- Can zero inventories be held? (JIT or vendor managed)



# Obsolete items

## – maximising residual value

- Circulate to other potential users
- Negotiate a return price with supplier
- Advertise, invite offers
- Sell by auction
- Sell to a merchant or dealer
- Sell to employees
- Give to a deserving cause
- Recycle
- Dismantle for spares



# Customer returns

- The issue of handling customer returns in different environments
- How the problem of customer returns might be examined and improved



# Reverse logistics

- Relevant when:
  - Products recalled for quality or safety reasons
  - Unwanted goods returned
  - Used packaging for recycling or disposal
- Methodology that could be used for improvements in the area of reverse logistics
- KPIs for reverse logistics:
  - Return rates
  - Actual costs
  - Costs less recovered costs
  - Time



# Determining the urgency

- For example contamination of food products where time is of the essence
- If either life threatening or threatening to the companies reputation then the return process is obviously urgent
- Used packaging or unwanted goods need to be dealt with efficiently but will not attract the same level of urgency



# Establishing where the goods are in the distribution channels

- The more complex the distribution channels the more costly it will be to locate and return the goods
- A good product traceability system is essential



# Collecting the goods

- If the goods are in the hands of the consumer this is the most difficult situation of them all
- Need to be able to contact them which is not always easy
- Associated transport costs will be higher than usual because consignments are likely to be smaller and more widely dispersed



# Isolating and quarantining returned goods

- This is necessary to avoid the possibility of them being inadvertently being dispatched again
- Especially important where the reason for collection is not immediately obvious to the casual observer



# Establishing the potential for salvage and reworking of the products

- Where material is moving back up the distribution channel for recycling the urgency may be reduced unless it is of a hazardous nature
- Important to note that the disposal and handling of all types of waste is controlled by a great deal of legislation



# Cost of returns

- Cost elements involved in a product recall fall under four headings:
  - Communication
  - Documentation
  - Replacement costs
  - Disposition costs.



# Session 6

## Stock management



# Learning objectives

At the end of this session candidates will be able to:

- evaluate methods for managing unit loads, pallets, cages and tote boxes
- appraise and evaluate inventory control systems for independent and dependent demand



# Managing unit loads

- Describe the terms: pallets, roll cages, tote boxes and their uses
- The problems associated with the management of these
- How improvements in efficiency in these areas can improve corporate profitability



# Pallets

- Most common unit load device (ULD) in distribution
- Basically flat platforms that on which a load is stacked and then bound or shrink wrapped against movement or theft
- Can be made of wood, plastic, metal or fibreboard
- Two common sizes:
  - Euro pallet 1200mm x 800mm
  - UK ISO 12,00mm x 1000mm
- Also a variety of types:
  - Two way or four way entry
  - Open or close boarded
  - Reversible & non reversible



# Roll-pallets or roll cages

- This ULD has removable metal sides and trolley wheels
- Size serves as way of keeping the goods secure in transit and for keeping all of one customer's goods together
- Trolley wheels allow for easy movement
- Used extensively in retailing



# Advantages

- Speed and ease of loading on vehicle
- Less risk of injury due to reduced manual handling
- Can load uniform and non uniform sized cartons together
- Reduces mix ups in consignments
- A reduction in the risk of pilferage
- Can wheel the unit straight to the point of delivery



# Disadvantages

- Cost of the units
- Repair and replacement costs
- Additional weight on the vehicle
- Risk of loss
- Reduced vehicle load capacity
- Need to bring empty units back



# Tote boxes

- Tote (meaning carry) bins are merely small containers usually stackable and made of wood or plastic
- Designed for carrying small items and items of low weight
- Typically used in retailing operations
- Allow small items to be kept together in transit
- Can be locked or sealed to prevent pilferage of individual items



# Dependent and independent demand

- When attempting to forecast the demand for apples the demand for oranges will not have any impact on the calculation
- It is said that the demand for such items is **independent demand**
- When attempting to forecast the demand for wheels and tyres, the quantities required will be directly related to the quantities of vehicle bodies that are being produced
- Likewise the number of car seats and car doors will be related to the number of vehicles being manufactured
- The demand for motor car components is said to be **dependent demand**



# Independent demand

- Independent demands are usually handled with stand-alone purchase orders, although some items might be covered by contractual relationships including volume/price and other agreements
- Those might use blanket purchase orders and releases
- Simple auto-regressive statistical models can adequately characterise most of the independent demands encountered



# Provisioning for independent demand items

- Independent demand is associated with:
  - fixed order quantities
  - continuous and periodic review systems.



# Stock control systems

There are two basic inventory / stock control systems for independent demand items

- 1) Periodic (or cyclical) review
- 2) Re-order point, sometimes described as 'continuous' or 'fixed order quantity'



# Session 7

## Controlling storage and distribution



# Learning objectives

At the end of this session candidates will be able to identify:

- different security measures that could be used in the area
- the effectiveness of different systems
- methodologies that could be used to improve efficiency and effectiveness
- how improvements between internal and external customers can reduce security problems
- the use of different systems established to control and manage the activity
- the need for an integrated computer system
- the need for systems that allow management by objectives and management by exception.



# Security risks

- Theft from vehicles
- Theft of vehicles
- Dishonest employees
- Theft of goods
- Theft of equipment



# Theft from distribution vehicles

- These are the most attractive targets
- Can often be loaded with high value goods
- Need to reduce opportunity of theft
  - Locking doors when left unattended
  - Not leaving keys in the ignition and the radio on
- Theft also high from vehicle tailboards & also miscounting can occur



# Security methods

## Premises:

- alarms
- fencing and gates
- floodlighting
- cctv
- night patrols
- guard dogs.

## Vehicles:

- alarms
- steering column locks
- tracking systems.



# Staff training

- Communicate penalties for dishonesty of staff
- Train in secure systems for high-value loads
- Train in security awareness
- Ensure they do not discuss plans etc. outside of work
- Encourage team working for loading / unloading – for example, watching tailgates



# Security action

Firms need to:

- establish tough policies for dealing with dishonesty amongst staff and theft in particular
- establish secure systems for safeguarding high value loads
- build-in security systems to their premises for example buildings or vehicle parking areas
- equip vehicles and trailers with secure locks and alarm systems.



# Security during recruitment

- Need to take security right back to staff recruitment
- Especially distribution drivers since they are let loose unsupervised and frequently unmonitored with vehicles and loads valued at many thousands of pounds
- Need to check credentials thoroughly
- References should be taken up and previous firms vetted
- When high value loads concerned can use a firm that specialises in security checks
- Can also use fidelity guarantee insurance cover – insures against employees dishonesty



# Use of security devices

On premises:

- High strong, alarmed fencing
- Lockable gates
- Floodlighting of the premises
- Manned entrances and exits during working hours
- Night patrols and patrol checks
- CCTV with manned monitors and video recording – now static state
- Alarm systems – linked to police station
- Guard dogs – providing precautions taken.



# Use of security devices

## On vehicles:

- Steering column lock
- Engine immobiliser
- Good cab door and load space locks
- Alarms on vehicle and trailer
- Kingpin and other types of trailer lock
- Lockable fuel tanks and fuel flow meter
- Tracker systems
- Identification painted on roof to allow spotting from air
- Use of electronic seals on vehicles and trailers
- Keeping keys secure when not in use



# Integrated computer systems

- Direct product profitability (DPP) – costs allocated to specific products so areas of inefficiency identified
- Materials requirements planning (MRP) – distribution requirements planning (DRP) – reduce freight, storage and inventory holding costs and improve customer service
- Just-in-time (JIT) – eliminates costs and wastage in production – linked to supply and demand



# Session 8

Storage and distribution - performance



# Learning objectives

At the end of this session candidates will be able to:

- major performance criteria
- comparative ratios
- benchmarking
- evaluating chosen criteria with internal and external customers
- defining action plans for improvement
- the different roles of efficiency and effectiveness
- research and modelling in the stores and distribution area
- the appropriate technique in a given situation.

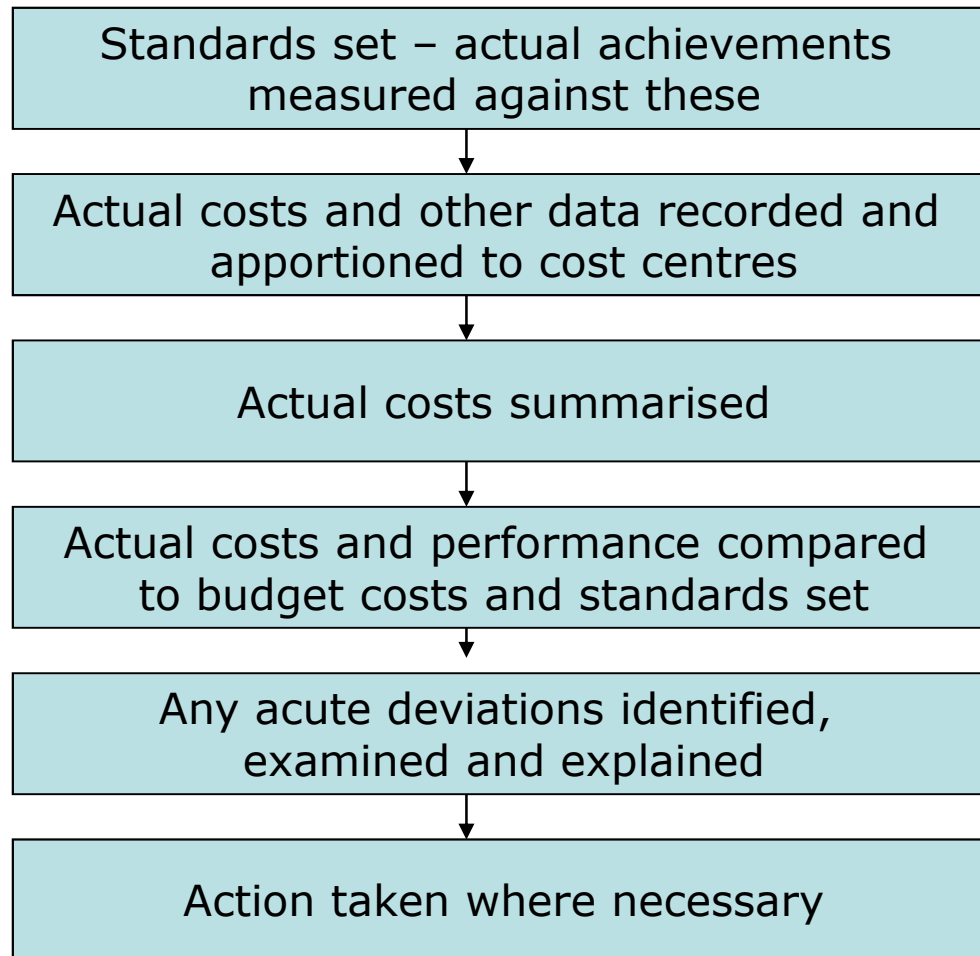


# Major performance criteria

- Service levels
- Utilisation
- Performance ratios



# Service levels



# Benchmarking

Objectives	Without benchmarking	With benchmarking
Becoming competitive	Internally focused Evolutionary change	Understanding of competition Ideas from proven practice
Industry best practices	Few solutions Frantic catch-up activity Based on history or gut feeling	Many options Superior performance
Defining customer requirements	Perception	Market reality
Establishing goals and objectives	Lacking external focus Reactive Pursuing pet projects	Objective evaluation Credible Proactive Solving real problems Understanding outputs
Developing productivity measures	Strengths and weaknesses not understood Route of least resistance	Based on industry best practices



# Performance monitoring

- Proportion of items supplied at first demand
- Number of order-pick errors
- Availability of back-orders
- Proportion of orders satisfied in full
- Amount of damage
- Order-to-ship cycle time
- Order-to-deliver cycle time
- Courtesy of staff, ease of ordering



# Research and modelling in stores and distribution

- Network analyses
- Distribution modelling
- Simulation
- Queuing theory



# Network analysis process

Often called critical path analysis

- The methodology for carrying out a network analysis is as follows:
  - List each necessary operation required to complete a project
  - Create a diagrammatic representation of the activities using arrows to link events which need to follow each other
  - Certain tasks do not need to be carried out sequentially the diagram can help to visualise activities that can be carried out simultaneously
  - It should be now possible to calculate the total time required for the project (lead time)



# Advantages of using network analysis

- Allows us to see which activities are dependent on others being completed on time
- The critical path is the line representing the longest sequence of events required to complete a project.
- Can find out which activities can be carried out simultaneously
- Allows managers to pay more attention to tasks that lay on the critical path
- Also shows where resources should be concentrated if you want to shorten the time of the project. Referred to as crashing the network



# The modelling or simulation process

- The selection of logistics strategy should be driven by the corporate objectives and the business strategy
- The business strategy will help define priorities in the spheres of product portfolio, customer service priorities and geographical focus
- Once the business strategy is established modelling or simulation can be used to identify optimal warehousing and distribution strategies
- Typically would involve data collection, generating scenarios and evaluation of alternatives



# Data collection

Number of variables involved in any logistics system and data collection should ask to obtain quantitative information as far as possible

Examples:

- cost and lead times associated with having different number of warehouses
- costs associated with different handling solutions.
- estimated throughput using alternative handling systems
- inventory holding costs
- customer ordering profiles
- customer service targets.



# Queuing theory

- Many scenarios where things or people arrive at unscheduled intervals
- Mathematical formulae have been devised to improve the flow of customers at busy times
- By estimating the likely number of customers over a period of time, the average length of time taken to serve the customers it is possible to calculate the number of servers required to reduce waiting times
- Good example is the supermarket
- Can also be used in storage and distribution.



# Session 9

Legal aspects

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# Learning objectives

At the end of this session candidates will be able to:

- the areas affected by the Health and Safety at Work Act
- the roles and responsibilities of staff and management in the working of the Act
- major roles placed on organisations as a result of the Act
- the requirements of COSHH (Control of Substances Hazardous to Health) in the materials and environments to which they are applicable
- the roles and responsibilities of management and staff under the Act
- the role of major transport legislation in the control of hazardous goods
- the role under this legislation for drivers and organisations involved.



# Health and safety

- To maintain and improve standards of health and safety for people at work
- To protect people against risks arising from work of others
- To control the storage and use of explosives, highly flammable or dangerous substances
- To control the emission into the atmosphere of noxious or offensive fumes from work premises



# Requirements of organisations

- Draw up health and safety policies
- Appoint safety representatives
- Establish safety committees
- Ensure that workplaces meet all necessary safety requirements of the law
- Every employee is also responsible for their own safety and that of others



# Specific regulations for storage and distribution

- Carry out risk assessments and record findings
- Maintenance of workplaces
- Ventilation and temperatures
- Lighting
- Condition of floors and routes for pedestrians and vehicles
- Protection from falling objects and from persons falling from a height
- Manual handling regulations
- Personal protective equipment



# Control of substances hazardous to health (COSHH)

- To protect employees who are exposed to hazardous substances in the workplace
- Carry out risk assessment and put measures in place to prevent or control identified risks
- Monitor employee exposure to hazardous work processes
- Inform, instruct and train employees
- Ensure all processes are ongoing and reviewed regularly
- Important when hazardous substances being transported



# Major transport legislation

- Goods vehicle licensing
- Driver licensing
- Goods vehicle excise duty and insurance
- Driver's hours law and tachograph controls
- Goods vehicle weights and dimensions
- Construction, use and lighting of vehicles
- Maintenance and annual testing of heavy vehicles
- Special load regulations



# Good repute

Vehicle operators must be free of past convictions for the following offences:

- overloading
- use of defective vehicles
- unauthorised (unlicensed) vehicle use
- failure to comply with driver's hours law and tachograph recording requirements
- goods vehicle plating and annual testing
- observance of speed limits and other traffic regulations
- forgery and fraudulent use of road haulage licences and permits.



# Session 10

New developments and concepts

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# Learning objectives

At the end of this session candidates will be able to:

- evaluate the role of ICT in storage and distribution
- evaluate major developments in ICT and their effect on storage and distribution
- evaluate the use and impact of the internet on the storage and distribution function
- evaluate the use and impact of enterprise resource planning (ERP) and its overall value to the organisation.



# ICT and it's role and scope

## Systems

- Electronic data interchange
- Enterprise resource planning
- Supply chain management
- Warehouse management
- Forecasting and inventory management
- Vehicle fleet management
- Computerised routing and scheduling
- EPOS



# Use of computers in basic stores management

- Electronic data interchange (EDI)
- Data capture
- Bar code scanning
- OCR scanning
- Voice recognition
- Radio data transmission
- Inventory control
- Traffic information



# Role of the internet

- Home shopping
- Small loads
- Personalised service
- Return of perishable goods
- Limited time windows
- Specialist small vehicles



# Role of the internet

- Business to Business (B2B) – direct trading
- New geographical markets
- Downloading overcomes some infrastructure barriers
- Reverse auctions
- Direct sourcing of raw materials



# Use of the internet in supplier selection and relationship development

- Research into potential suppliers using company sites
- Checks with Companies House
- Checks with credit agencies
- Use of extranet to share information



# Relevant developments in technology

- EDI
- EPOS
- Data-capture devices
- Voice-recognition systems
- Mobile computing
- Radio frequency technologies
- Truck and trace systems in different environments
- GPS



# Enterprise resource planning (ERP)

Software that integrates all departments and functions across a company onto a single computer system that can serve all those departments' particular needs

It:

- Integrates financial information
- Integrates customer order information
- Standardises and speeds up manufacturing processes
- Reduces inventory
- Standardises HR information

