Osmania University

Course : Supply Chain Management

MAM -Semester : X

Amjad Ali Khan College of Business Administration - Banjara Hills Hyderabad India

Learning outcomes

- The Course is aimed at understanding the role of supply chain in enhancing organizational efficiency and delivering customer value
- To understand the various drivers of a successful supply chain strategy and structure are also addressed in the programme.
- To highlight the significance of lean, green and agile supply chain management

Syllabus Outline

- Unit - I: Introduction to supply chain Management
- Unit - II: Supply Chain Structure and Inventory in SC
- Unit - III: Role of Transportation in Supply Chain
- Unit - IV: Information Technology in SCM
- Unit - V: Key Operation Aspects in Supply Chain

Supply Chain Management

Supply chain management is the **management** of the flow of goods and services and includes all processes that transform raw materials into final products. It involves the active streamlining of a business's **supply**-side activities to maximize customer value and gain a competitive advantage in the marketplace

Cont…

- SCM encompasses the integrated planning and execution of processes required to optimize the flow of materials, information and capital in functions that broadly include demand planning, sourcing, production, inventory management and logistics -- or storage and transportation. Companies use both business strategy and specialized software in these endeavours to create a competitive advantage.

The 5 essential stages in developing a successful supply chain

- Stage 1: Plan. Planning involves a wide range of activities
- Stage 2: Source. This aspect of supply chain management involves organizing the procurement of raw materials and components
- Stage 3: Make
- Stage 4: Deliver
- Stage 5: Return

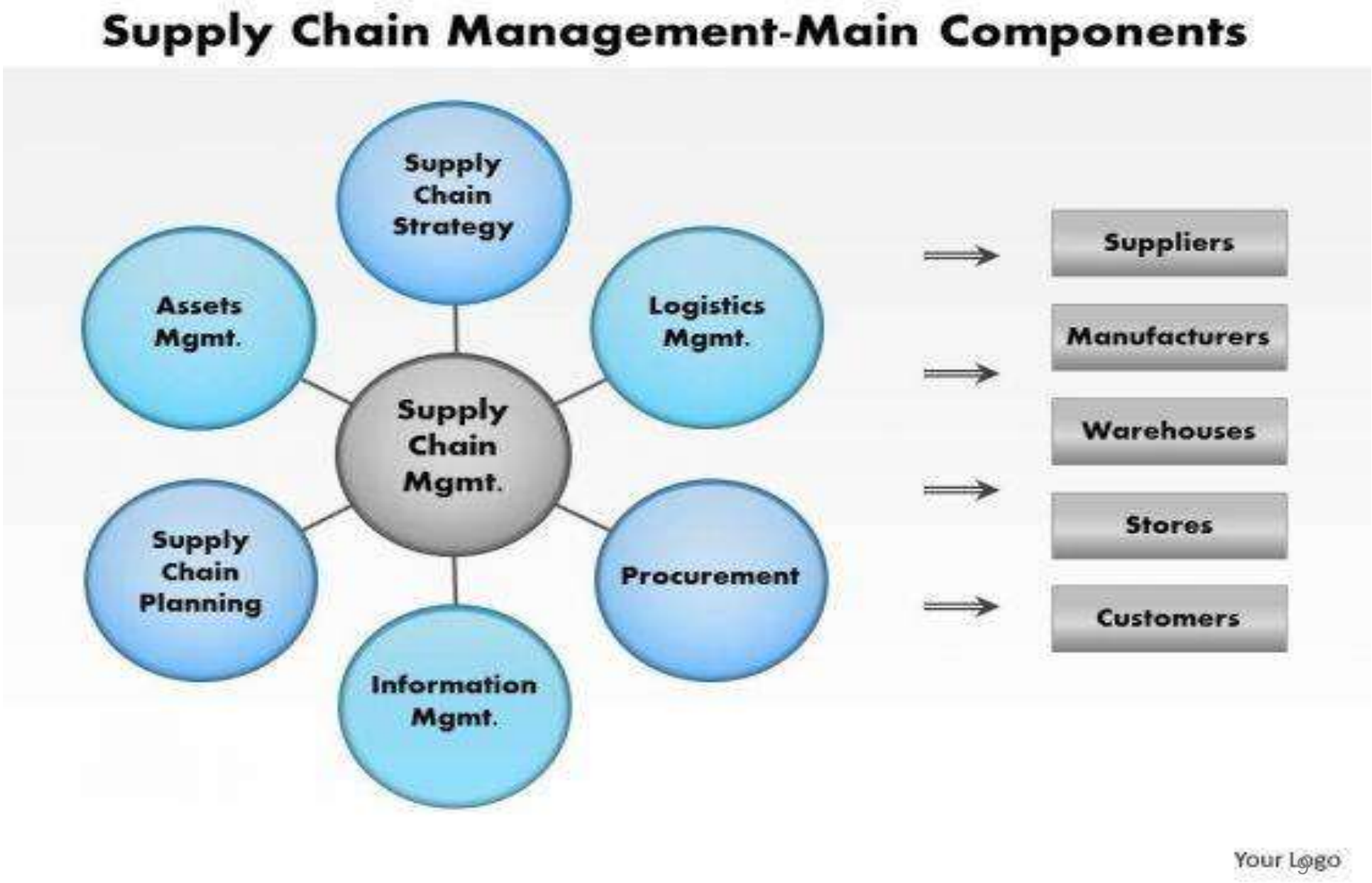
Main functions of Supply Chain Management are as follows:

- Inventory Management
- Distribution Management
- Channel Management
- Payment Management
- Financial Management
- Supplier Management
- Transportation Management
- Customer Service Management

OBJECTIVES OF SUPPLY CHAIN MANAGEMENT

- Service Orientation.
- System Orientation.
- Competitiveness and Efficiency.
- Minimizing the Time.
- Minimizing Work in Progress.
- Improving Pipeline Visibility.
- Improving visibility Demand.
- Improving Quality.
- Reduces Transportation Cost.
- Reduces Warehousing Cost.

SCM-Framework



Supply chain strategy

- **Supply chain strategy** is an iterative process that evaluates the cost- benefit trade-offs among operational components it also involves leveraging the core competencies of the organization to deliver value to the ultimate customer, the supply chain strategy is a combination of policies, processes, and procedures that should be followed to ensure delivery of the final product from point of manufacturer to customer

SCM - Strategy

- The SCM strategy is consist of various components like
- product flow, financial flow, information flow
- value flow & , risk flow
- Scheduling the logistics process
- Shipment planning
- Financial management
- Regulatory compliance
- Customer service

- Inventory Management – Demand and Supply Planning
- Packaging Strategy
- Warehouse management
- Supply Chain Safety and Security
- Distribution and transportation

Global supply chain

- A global supply chain is a dynamic worldwide network when a company purchases or uses goods or services from overseas. It involves people, information, processes and resources involved in the production, handling and distribution of materials and finished products or providing a service to the customer.

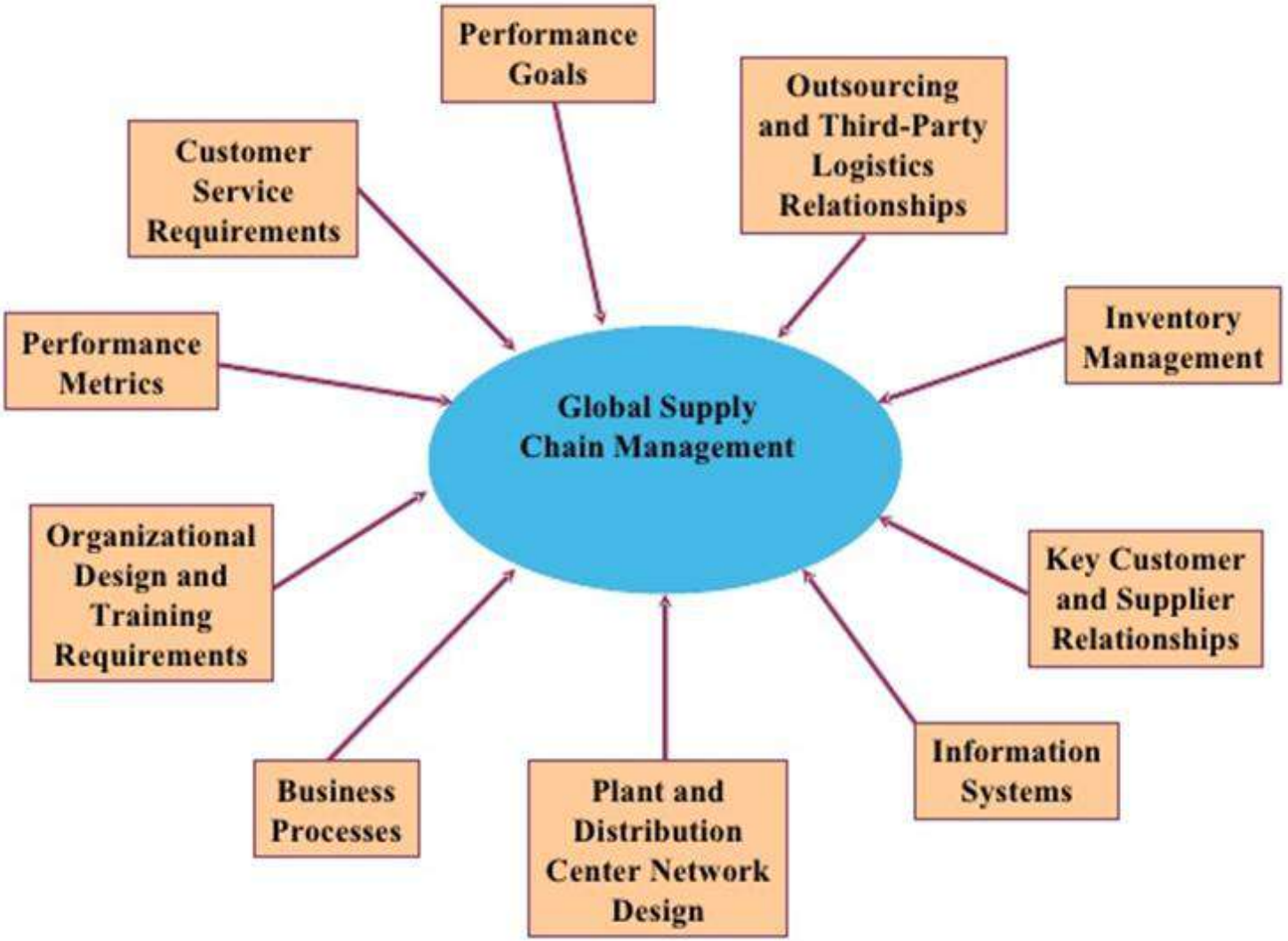
Global Supply Chain Management Factors

- **Costs**
  - Local labor rates / International freight tariffs
  - Currency exchange rates
- **Customs Duty**
  - Duty rates differ by commodity and level of assembly
  - Impact of GATT/WTO: Changes over time
- **Export Regulations & Local Content**
  - Denied parties list / Export licenses
  - Local content requirement for government purchases
- **Time**
  - Lead time /Cycle time /Transit time /Customs clearance
- **Taxes on Corporate Income**
  - Tax havens and not havens
  - Make vs. buy effect

Factors Impacting Global Supply Chains

- **1. Market and competition** are all factors involved in marketing and selling to global markets, including considering customer preferences and competition.
- 2. **Cost** is often the most cited reason by companies for going global.
- 3. **Infrastructure** includes access to roads and transportation, equipment and communication networks, distribution systems, and skilled labor.
- 4. **Technology** includes availability of bar code technology, GPS, and RFID that enable global product tracking and communication.
- 5. **Politics and economy** include government regulations, political stability, trade agreements, and currency fluctuations.
- 6. **Culture** refers to acceptable behaviors, beliefs and norms characteristic of a particular country.

Elements of a Global SCM



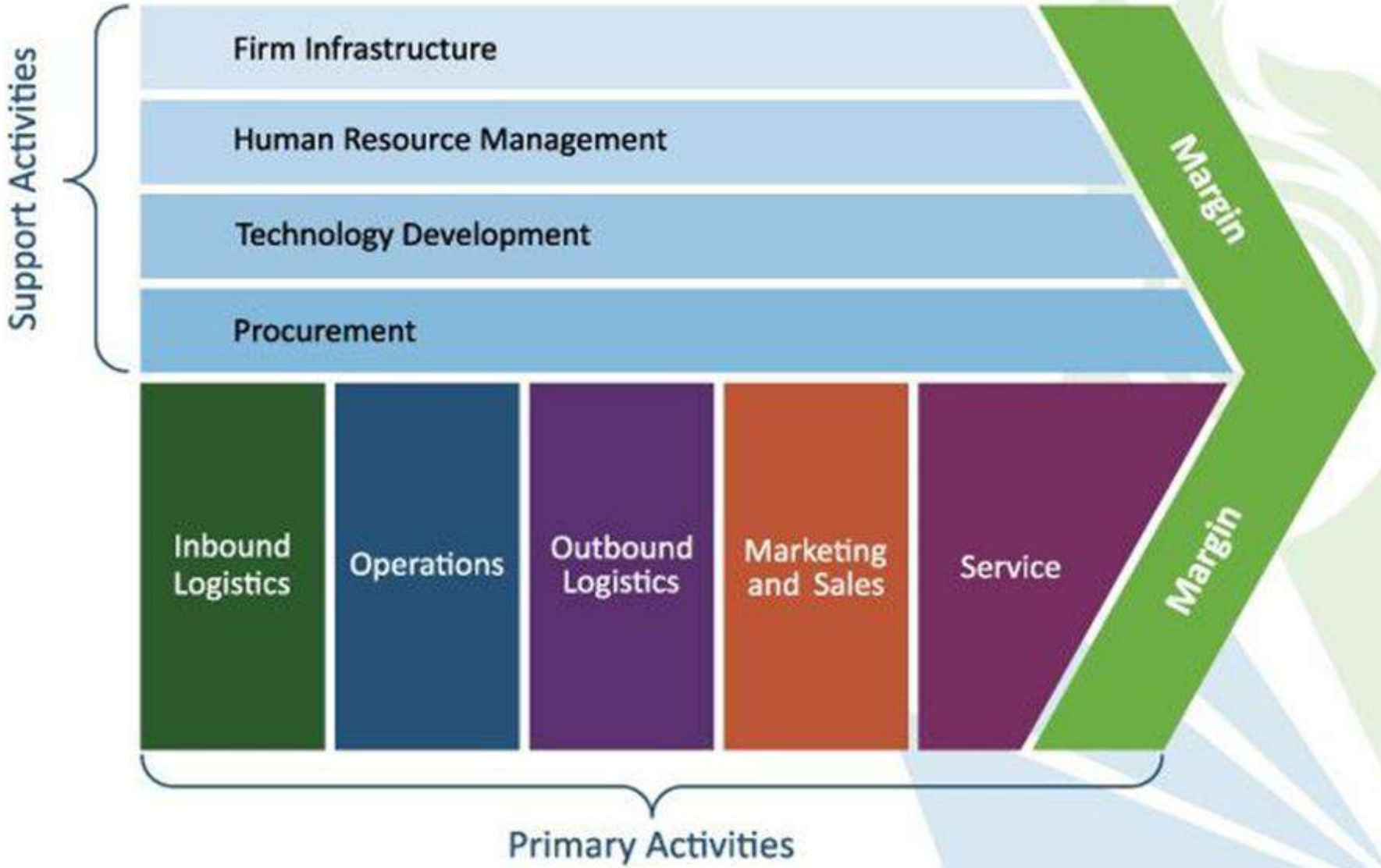
Value Delivery Network

- The network made-up of the company, suppliers, distributors and ultimately customers who "partner" with each other to improve the performance of the entire system in delivering customer value.
- *Upstream partners:* set of firms that supply stuffs needed to create a product or service.
- *Down stream partners:* firms that help producers to deliver products to the customers.

Value chain

- Value chain refers to the functional activities of a business that add value to its customers. The concept was created around 1985 by Michael Porter
- It consists of primary activities and support activities, all of which add value to the products or services offered by the business
- When managing the value chain system, the idea is to optimize the chain so as to maximize value while minimizing cost.

Value Chain Analysis



Bullwhip effect

- The bullwhip effect is a distribution channel phenomenon in which forecasts yield supply chain inefficiencies. It refers to increasing swings in inventory in response to shifts in customer demand as one moves further up the supply chain
- Distortion in the data pertaining to the degree of demand as it moves from one to other stage In the supply china management

- The bullwhip effect on the supply chain occurs when changes in consumer demand causes the companies in a supply chain to order more goods to meet the new demand. The bullwhip effect usually flows up the supply chain, starting with the retailer, wholesaler, distributor, manufacturer and then the raw materials supplier.
- factors contribute to the bullwhip effect are : lack of communication and coordination, batch ordering, price fluctuations, overreaction to backorders, errors in forecasting, inflated orders, and product promotions.

Reducing the Bullwhip Effect

- Collaborate with customers and suppliers. Another strategy to improve supply chain effectivity is through better collaboration with customers and suppliers. ...
- Improve forecast accuracy. ...
- Enable fast decisions with visibility and insight.
- Adopt a demand driven supply chain management approach.

AGGREGATE PLANNING

Aggregate planning is the process of developing, analyzing, and maintaining a preliminary, approximate schedule of the overall operations of an organization. The aggregate plan generally contains targeted sales forecasts, production levels, inventory levels, and customer backlogs. This schedule is intended to satisfy the demand forecast at a minimum cost.

Defined as …

- **Aggregate planning** involves translating long-term forecasted demand into specific production rates and the corresponding labor requirements for the intermediate term.

objectives

- Minimize cost / maximize profits
- Maximize customer service
- Minimize inventory investment
- Minimize changes in production rates
- Minimize changes in workforce levels
- Maximize utilization of plant and equipment

Aggregate planning process

- Determine demand for each period .
- Determine capacities for each period .
- Identify policies that are pertinent .
- Determine units costs for units produced .
- Develop alternative plans and compute costs for each.
- Select the best plan that satisfies objectives .

- **Demand planning** is a multi-step operational supply chain management SCM process used to create reliable forecasts. Effective demand planning can guide users to improve the accuracy of revenue forecasts, align inventory levels with peaks and troughs in demand, and enhance profitability for a given channel or product.

Forecasting

- The use of historic data to determine the direction of future trends. Forecasting is used by companies to determine how to allocate their budgets for an upcoming period of time. This is typically based on demand for the goods and services it offers, compared to the cost of producing them. Forecasting also provides an important benchmark for firms which have a long-term perspective of operations.

Managing Predictable Variability

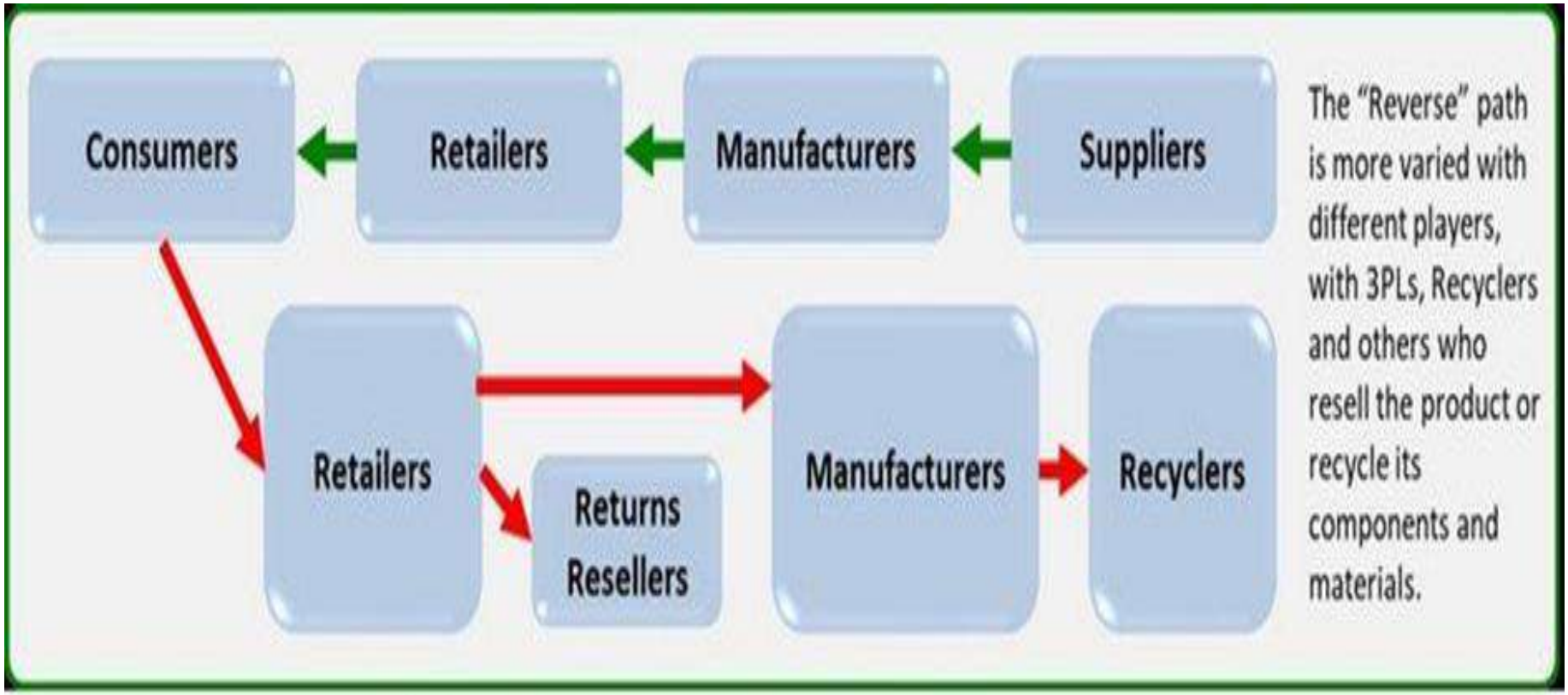
- **Predictable variability** is change in demand that can be forecasted Can cause increased costs and decreased responsiveness in the supply chain A firm can handle predictable variability using two broad approaches:
- **Manage supply** : using capacity, inventory, subcontracting, and backlogs
- **Manage demand** : using short-term price discounts and trade promotions
-

II-Unit

Reverse Supply Chain

- The process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. Remanufacturing and refurbishing
- It is “the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.

- reverse logistics manages the reverse movement of goods, in other words returns management within supply chain function. Examples
- Return to suppliers
- Resell
- Refurbish/Recondition
- Remanufacture
- Recall
- Recycle



2 - The basic components of Outbound and Inbound Logistics

SCOR –Model

- The supply chain operations reference model (SCOR) is a management tool used to address, improve, and communicate supply chain management decisions within a company and with suppliers and customers of a company (1). The model describes the business processes required to satisfy a customer's demands

SCOR is based on six factors

- *Plan* – Processes that balance aggregate demand and supply.
- *Source* – Processes that procure goods and services
- *Make* – Processes that transform product to a finished state
- *Deliver* – Processes that provide finished goods and services

- *Return* – Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support.
- *Enable* – Processes being associated with the management of the supply chain. These processes include management of: business rules, performance, data, resources, facilities, contracts, supply chain network management

Unit - III

Strategic Alliance

Strategic alliances are agreements between companies (partners) to reach objectives of a common interest. Alliances are among the various options which companies can use to achieve their goals. They are based on cooperation between companies.

Purposes of Strategic Alliances

- Competition is shifting from a "firm versus firm perspective" to a "supply chain versus supply chain perspective." Therefore, firms seeking competitive advantage are participating in cooperative supply chain arrangements, such as strategic alliances, which combine their individual strengths & unique resources.

- Enabling a firm to focus resources on its core skills & competencies while acquiring other components or capabilities it lacks from the marketplace.

- Alliances can often improve market power of a firm because either the alliance partner is a customer for the product or because the distribution channels & buying power of the partners can be combined

Purposes of Strategic Alliances cont'd

- **Alliances enable buying & supplying firms to combine their individual strengths & work together to reduce non-value-adding activities & facilitate improved performance.**

- **In order for both parties to remain committed to this form of relationship, mutual benefit must exist (i.e. a "win-win" relationship)**

Success Factors

- **Selection:**
  - **Strategically evaluate which upstream & downstream members should be included in the supply chain to create a highly competitive & efficient supply network.**
  - **Selecting strategic partner should be based on company's goals, objectives & values system.**
  - **Select partners who have competencies in collaboration & those who already have a proven ability to work in a collaborative environment.**
- **Intention:**

  Both partners should acknowledge their mutual dependence & their willingness to work for the survival & prosperity of the relationship.

Success Factors cont'd

- **Trust:**
  - **Existence of trust in a relationship reduces perception of risk associated with opportunistic behavior as this generates greater profits & serve customers better**
- **Communication:**
  - **Communication is critical for building successful relationships to achieve the benefits of collaboration as it allows partners to understand alliance goals, roles, responsibilities & helps with the sharing & dissemination of individual experiences**
- **Conflict Resolution:**
  - **Firms should be motivated to engage in joint problem solving as they are, by definition, linked together to manage an environment that was more uncertain & turbulent than each one could control.**

Success Factors cont'd

- **Developing a focused winning strategy for the alliance:**
  - **Based on distinctive competencies and competitive advantages of the partners in the selected target market (s).**
  - **To ensure there will not be a goal divergence or conflict between alliance partners.**
  - **To be able to manage the company cultural challenges that may arise between the alliance partners.**
- **Partners should be in vulnerable strategic positions:**
  - **(i.e., in need of resources) or when they are in strong social positions (i.e., possess valuable resources to share). seeking complementary or similar resources for transferring or pooling.**
- **Progressive learning & value capturing:**
  - **Learning involves significant transfer of tacit, specialized & complex knowledge. Learning requires close collaboration of both firms to overcome transfer challenges as knowledge, values, culture and organizational forms.**

Success Factors cont'd

- **Respect and protect the brand of each partner.**
- **Determine and align decision rights:**
  - **To define what decisions are important to the alliance, which partner should make them and how the decisions will be made and monitored.**
- **Exit Strategy:**
  - **Agree upon an exit strategy for the alliance. It Is important to have agreement in advance on how the alliance will be concluded if and when it may fail and/or when it has fulfilled its mission and achieved its goals and objectives**

Mistakes Leading to Failure

- **Alliance business is viewed internally by one partner.**
- **One of the partners is too dependant on the other's capabilities.**
- **Problems and dilemmas of mistrust.**
- **Cultural & language barriers.**
- **Collaboration in competitively sensitive areas can be difficult.**
- **A clash of egos might occur.**

Types of Strategic Alliances

- **Joint Venture: an agreement by two or more parties to form a single entity to undertake a certain project. Each of the businesses has an equity stake in the individual business and share revenues, expenses & profits.**

- **Outsourcing**

- **Global Strategic Alliances: working partnerships between companies (often more than 2) across national boundaries & increasingly across industries. Sometimes formed between company & a foreign government, or among companies & governments**

Types of Strategic Alliances cont'd

- **Equity strategic alliance:** an alliance in which 2 or more firms own different percentages of the company they have formed by combining some of their resources & capabilities to create a competitive advantage.

- **Non- equity strategic alliance:** an alliance in which 2 or more firms develop a contractual-relationship to share some of their unique resources & capabilities to create a competitive advantage.

Types of Strategic Alliances cont'd

- **Distributors: Recruiingt distributors, where each one has its own geographical area or type of product. This ensures that each distributor's success can be easily measured against other distributors.**

- **Distribution Relationships: This is perhaps the most common form of alliance. Strategic alliances are usually formed because the businesses involved want more customers. The result is that cross-promotion agreements are established.**

- **Product Licensing: This is similar to technology licensing except that the license provided is only to manufacture and sell a certain product. Usually each licensee will be given an exclusive geographic area to which they can sell to. It's a lower-risk way of expanding the reach of your product compared to building your manufacturing base and distribution reach.**

Public Private Partnership

A public-private partnership is a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional.

Another Definition

A public-private partnership exists when public sector agencies (federal, state, or local) join with private sector entities (companies, foundations, academic institutions or citizens) and enter into a business relationship to attain a commonly shared goal that also achieves objectives of the individual partners.

Typical Uses

Contracting with a private company to:

- Renovate
- Construct
- Operate
- Maintain
- And/or Manage

A facility or system

Benefits

Expedited project completion

Project cost savings

Improved quality

Use of private resources

Access to new sources of private capital

Basic Dimensions of P3

- Shared goals
- Shared resources (time, money, expertise, people)
- Shared risks
- Shared benefits

PPP-P

1. Genesis
2. Feasibility
3. Plan & Test
4. Procure
5. Implement
6. Operations

BENCHMARKING

For Best Practices

What is Benchmarking

- A method for identifying and importing best practices in order to improve performance
- The process of learning, adapting, and measuring outstanding practices and processes from any organization to improve performance

Why Benchmark

- Identify opportunities to improve performance
- Learn from others' experiences
- Set realistic but ambitious targets
- Uncover strengths in one's own organization
- Better prioritize and allocate resources

Types of Benchmarking: 1

- Strategic Benchmarking

  How public, private, and nonprofit organizations compare with each other. It moves across industries and cities to determine what are the best strategic outcomes.

Types of Benchmarking: 2

- Performance Benchmarking

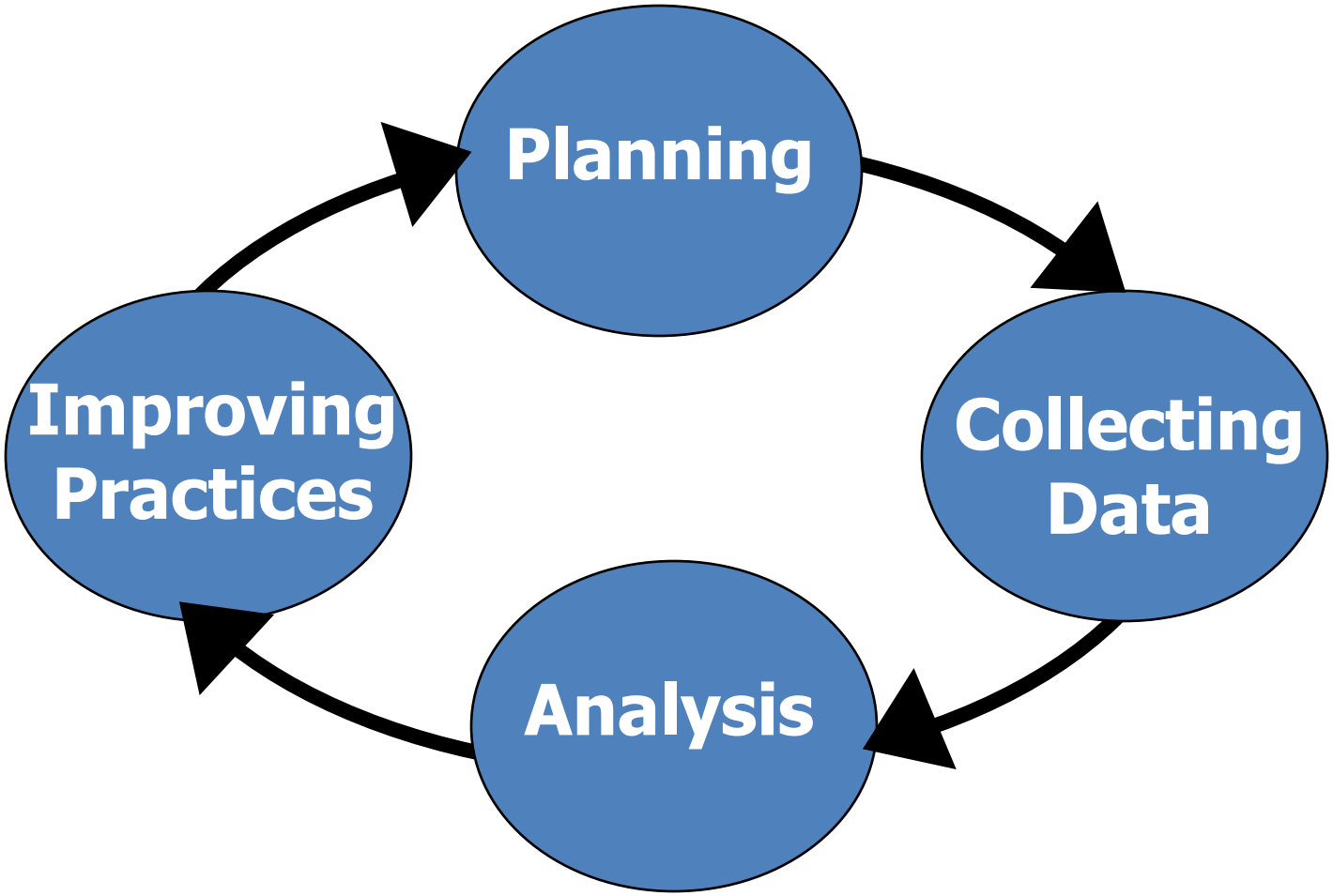
How public, private, and nonprofit organizations compare themselves with each other in terms of product and service. It focuses on elements of cost, technical quality, service features, speed, reliability, and other performance comparisons.

Types of Benchmarking: 3

- Process Benchmarking

  How public, private, and nonprofit organizations compare through the identification of the most effective operating practices from many organizations that perform similar work processes.

Benchmarking Process



WAREHOUSING
OR
STOCK KEEPING UNIT

- Part of firms logistics system that stores products at and between point of origin and point of consumption.

- Term “Warehousing” is referred as transportation at zero miles per hour

- Warehousing provides time and place utility for raw materials, industrial goods, and finished products, allowing firms to use customer service as a dynamic value-adding competitive tool.

THE ROLE OF THE WAREHOUSE IN THE LOGISTICS SYSTEM

- The warehouse is where the supply chain holds or stores goods.
- Functions of warehousing include
  - Transportation consolidation
  - Product mixing
  - Docking
  - Service
  - Protection against contingencies

TYPE OF WAREHOUSING

- Public Warehousing
- Private Warehousing
- Contract Warehousing
- Multi-client Warehousing

PRINCIPLES OF WAREHOUSE LAYOUT DESIGN

Use one-story facilities

Move goods in a straight line

Use efficient materials-handling equipment

Use an effective storage plan

Minimize aisle space

Use maximum height of the building

OBJECTIVES OF EFFICIENT WAREHOUSE OPERATIONS

- Provide timely customer service.
- Keep track of items so they can be found readily & correctly.
- Minimize the total physical effort & thus the cost of moving goods into & out of storage.
- Provide communication links with customers

- Benefits of Warehouse Management
  - Provide a place to store & protect inventory
  - Reduce transportation costs
  - Improve customer service levels
- Complexity of warehouse operation depends on the number of SKUs handled & the number of orders received & filled.
- Most activity in a warehouse is material handling.

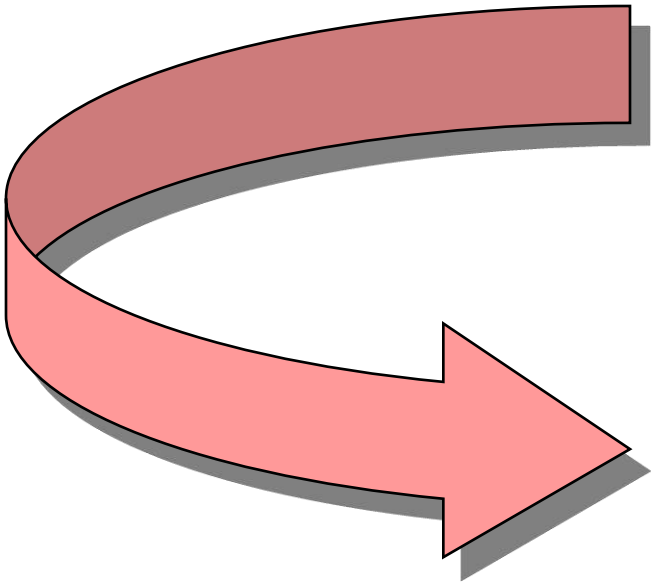
COSTS OF OPERATING A WAREHOUSE

- Capital costs
  - Costs of space & materials handling equipment
- Operating costs
  - Cost of labor
  - Measure of labor productivity is the number of units that an operator can move in a day

WAREHOUSE ACTIVITIES

- Receive goods
- Identify the goods
- Dispatch goods to storage
- Hold goods
- Pick goods
- Marshal shipment
- Dispatch shipment
- Operate an information system

Materials Handling



Materials handling is

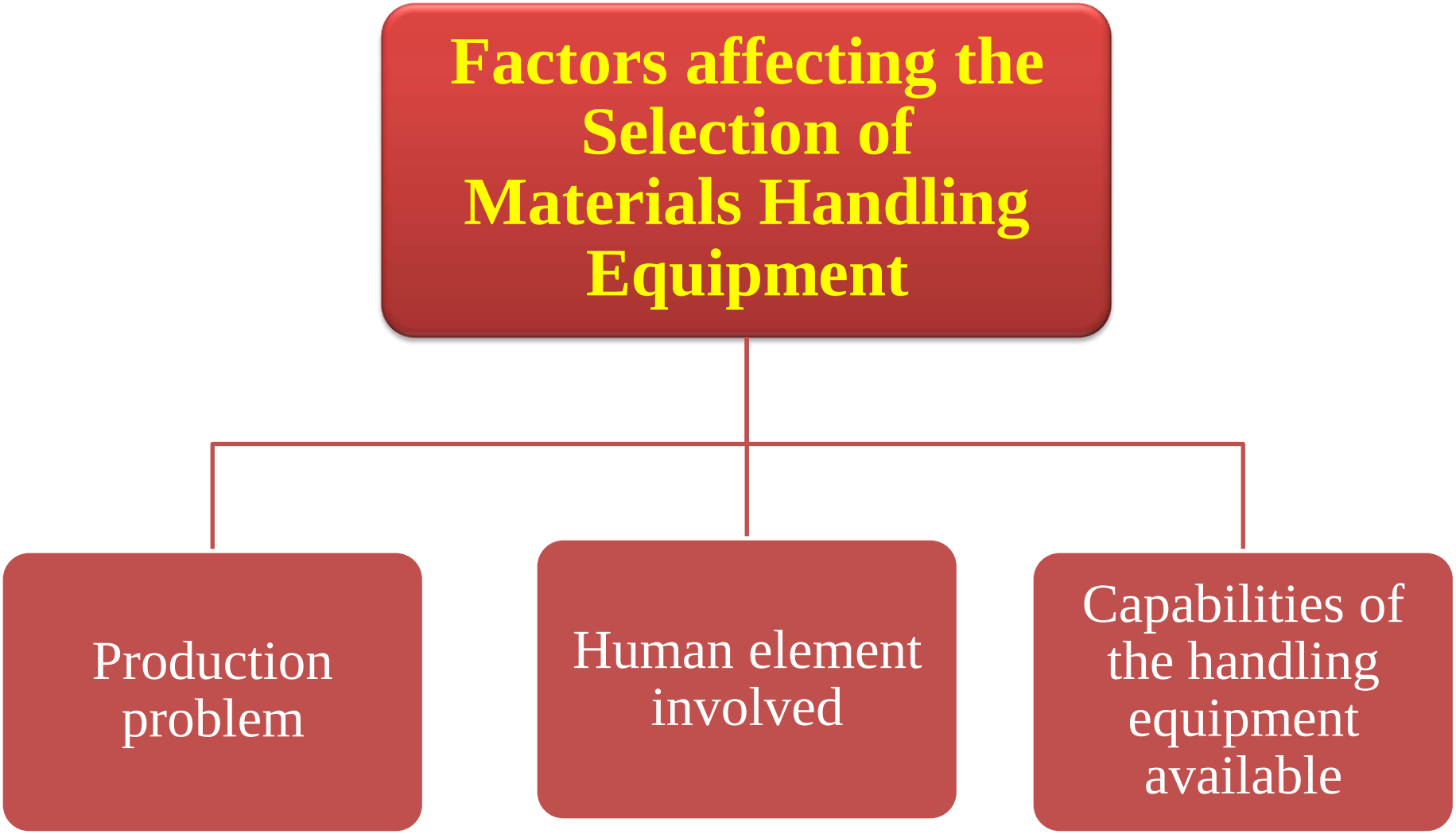
the art and science of moving, packing and storing of substances in any form.

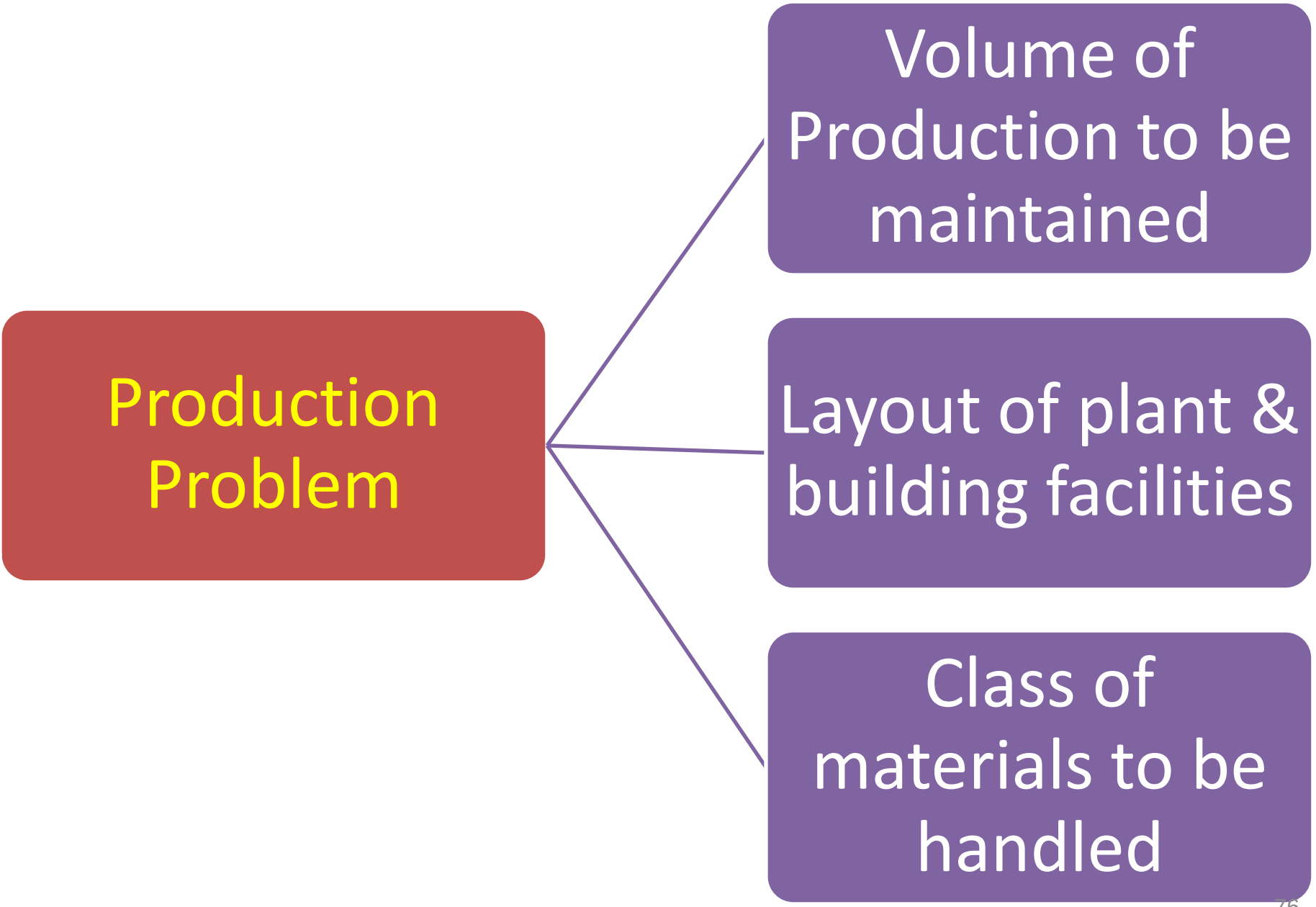
Objectives of Materials Handling

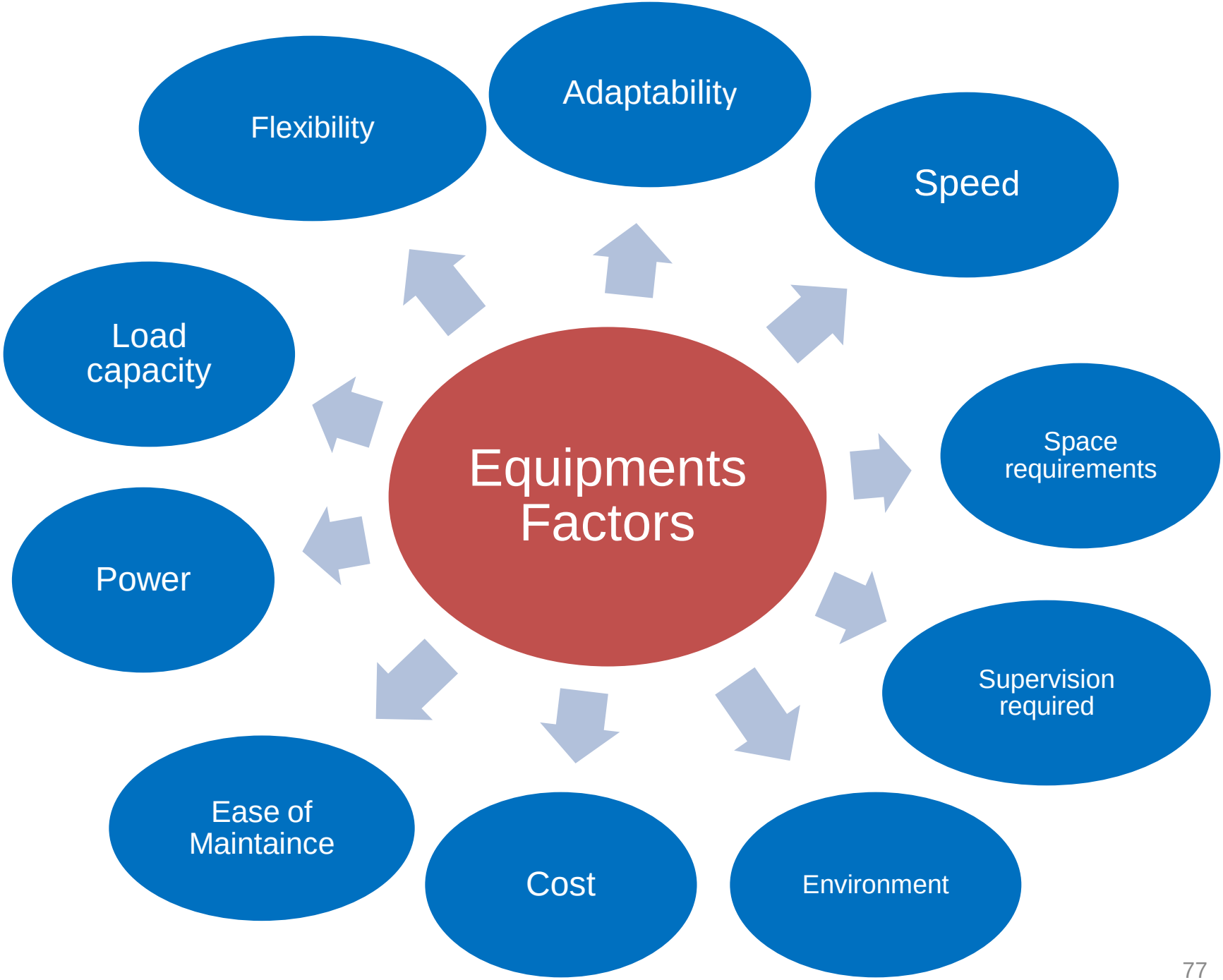
- To Lowers unit materials handling cost
- To reduce manufacturing cycle time
- To provide better control of the flow of materials
- To provide better working conditions
- To provide Contribution for better quality by avoiding damages to products
- To Increase storage capacity
- To provide higher productivity at lower manufacturing costs

Material Handling Principles

- Material should be moved as little as possible
- Reduction in time by using shortest routers and mechanical material handling equipment
- The material movement should be in lots rather than in individual units
- Design of material handling equipment should be such that it can increase the effectiveness
- Gravity should be used
- Rehandling and back tracking of materials should be avoided
- Periodically Repairing ,Maintaince & Checkup of existing material handling equipments


Factors affecting the Selection of Materials Handling Equipment
Production problem
Human element involved
Capabilities of the handling equipment available


Production Problem
Volume of Production to be maintained
Layout of plant & building facilities
Class of materials to be handled


Equipments Factors
Flexibility
Adaptability
Speed
Load capacity
Space requirements
Power
Supervision required
Ease of Maintaince
Cost
Environment

Types of Material Handling Systems

1. Equipments oriented systems :-
   a) Convey or Systems
   b) Tractor transfer system
   c) Fork lift truck
   d) Industrial truck system
   e) Underground system
2. Material Oriented Systems
   a) Unit handling system
   b) Bulk handling system
   c) Liquid handling system

3. Methods oriented system
    a) Manual systems
    b) Automated systems
    c) Job shop handling system
    d) Mass production system
4. Function oriented system
    a) Transportation systems
    b) Conveying systems
    c) Transferring systems
    d) Elevating systems

Types of Materials Handling Equipment

1. Conveyers
2. Cranes, Elevators and Hoists
3. Industrial Trucks
4. Auxiliary Equipments

Unit-IV

Network Design in the Supply Chain

Network Design Decisions

- Facility role: What role should each facility play? What processes should be performed at each facility?
- Facility location: Where should facilities be located?
- Capacity allocation: How much capacity should be allocated to each facility?
- Market and supply allocation: What markets should each facility serve? Which supply sources should feed each facility?
- (How many plants, DC's, retail stores, etc. to build?)

Phase I: Strategy Considerations

- Understand where is the main emphasis:
  - Cost leadership
  - Responsiveness
  - Product differentiation
- Who are the key competitors at each target market?
- Identify constraints on available capital
- Key mechanisms that will support growth
  - Reuse of existing facilities
  - Build new facilities
  - Partner with other companies (mergers and acquisitions are potential options here)

Phase II: Regional facility configuration

- Important Factors:
- Regional demand
- Production technologies and economies of scale and scope
- Tariffs and Tax incentives
- Infrastructure factors
- Political, exchange rate and demand risk
- Competitive Environment

Infrastructure factors

- Availability of skilled labor
- Availability of transportation facilities
  - Ports
  - Airports
  - Rail
  - Highways
- Availability of necessary utilities
  - Power
  - Water
  - Sewage
  - Telecommunications / IT

Political, exchange rate and demand Risks

- Political risks -- Need for:
  - Well-defined rules of commerce
  - Independent and clear legal systems
  - Political stability
- Exchange rate risks: This risk arises from the fact that companies might incur their costs in one currency and collect their revenues in other currencies. (e.g., Japanese production under an expensive Yen in the late 80's / early 90's; the role of an expensive EURO these days for the American economy)
- Potential protection to exchange rate risk: Build some flexible over-capacity to the regional facilities so that production is shifted to the lower-cost regions.
- Demand risk: Comes from extensive demand fluctuation due to regional economic crises (e.g., Asia markets between 1996-1998) Plant flexibility is also a potential protection to this type of risk.

Phases III & IV: Selecting specific locations

- Important factors
- Infrastructure
- Costs
  - Labor
  - Materials
  - Facilities
  - Transport
  - Inventory
  - Taxes and Tariffs

Distribution Channels and Supply Chain Management

Supply Chains and the Value Delivery Network

Upstream partners include raw material suppliers, components, parts, information, finances, and expertise to create a product or service

Downstream partners include the marketing channels or distribution channels that look toward the customer

Supply Chains and the Value Delivery Network

Value Delivery Network

The value delivery network is the firm's suppliers, distributors, and ultimately customers who partner with each other to improve the performance of the entire system

The Nature and Importance of Marketing Channels

Marketing Channel Defined

Distribution channel is a set of independent organizations that help make a product or service available for use or consumption by the consumer or business users

Role of Channel Members in SCM

Connected by types of flows:

- Physical flow of products
- Flow of ownership
- Payment flow
- Information flow
- Promotion flow

Channel Design Decisions

- Intensive distribution
- Exclusive distribution
- Selective distribution

Channel Management

Channel management involves:

- Selecting channel members
- Managing channel members
- Motivating channel members
- Evaluating channel members

HRM functions in SCM

Issues in Workforce management

Supplier Relationship Management

Definition

The SRM process aligns, provides structures, and manages the supplier relationships.

Supplier Relationship Management Description

- Aligns and integrates
- Plans, resources, directs, confirms and adjusts the relationship between company and key suppliers
- Develops the network bonds of trust, commitment, cooperation & dependence
- Balances the levels of power within supply networks
- Contract Administration is genesis process for SRM

Enablers of Supplier Relationship Management

- Effective contract administration processes
- Agreements purposely structured for SRM
- Aligned values between company & Supplier
- Skilled, trained and capable personnel
- Leadership that supports & believes in SRM value proposition

Unit-V

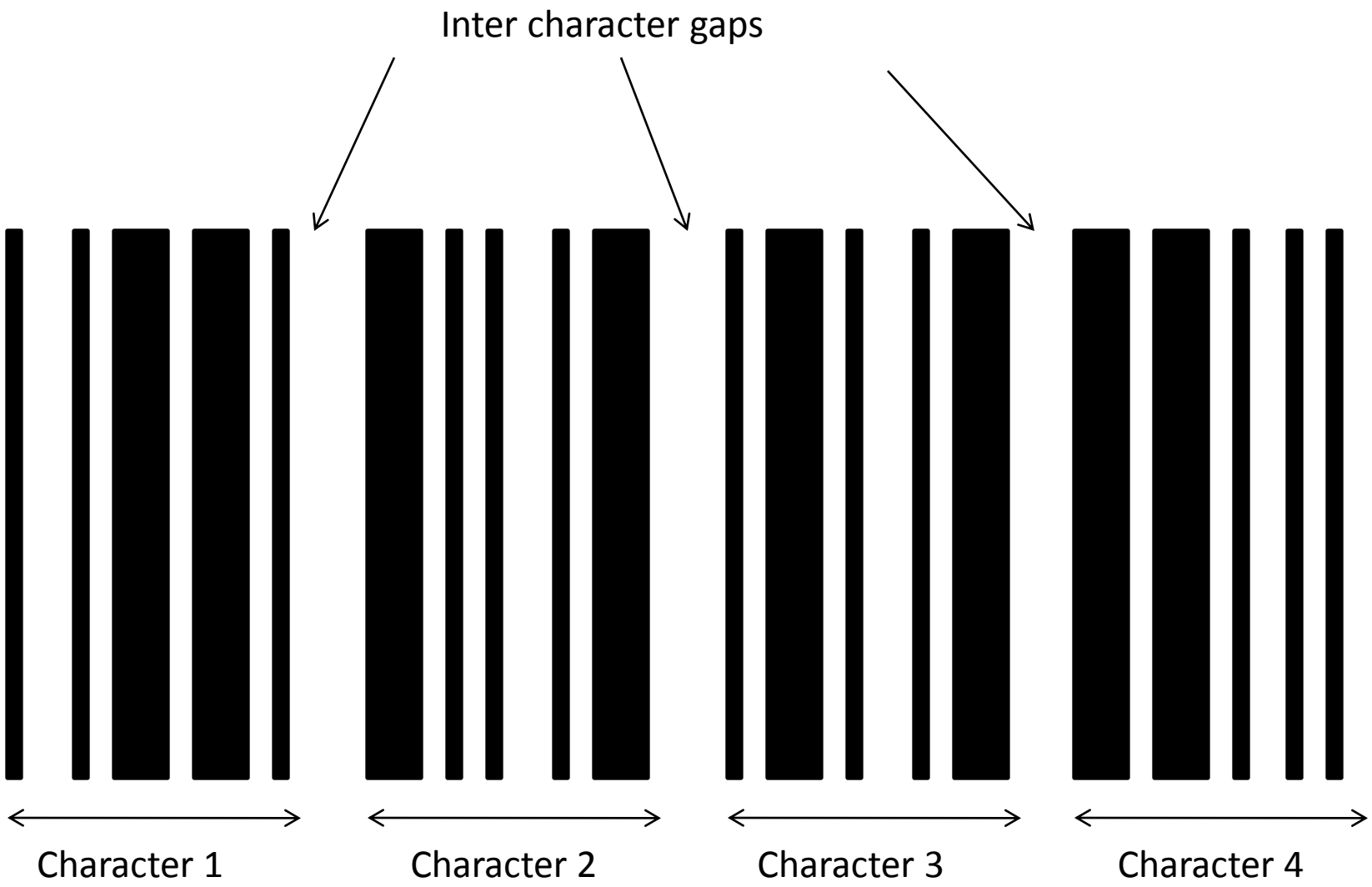
What is Bar code?

A barcode is an optical machine readable representation of data, which shows data about the object to which it attaches. Originally barcodes represented data by varying the widths and spacings of parallel lines, and therefore was referred to as linear or one-dimensional (1D). Later they evolved into rectangles, dots, hexagons and other geometric patterns in two dimensions (2D).

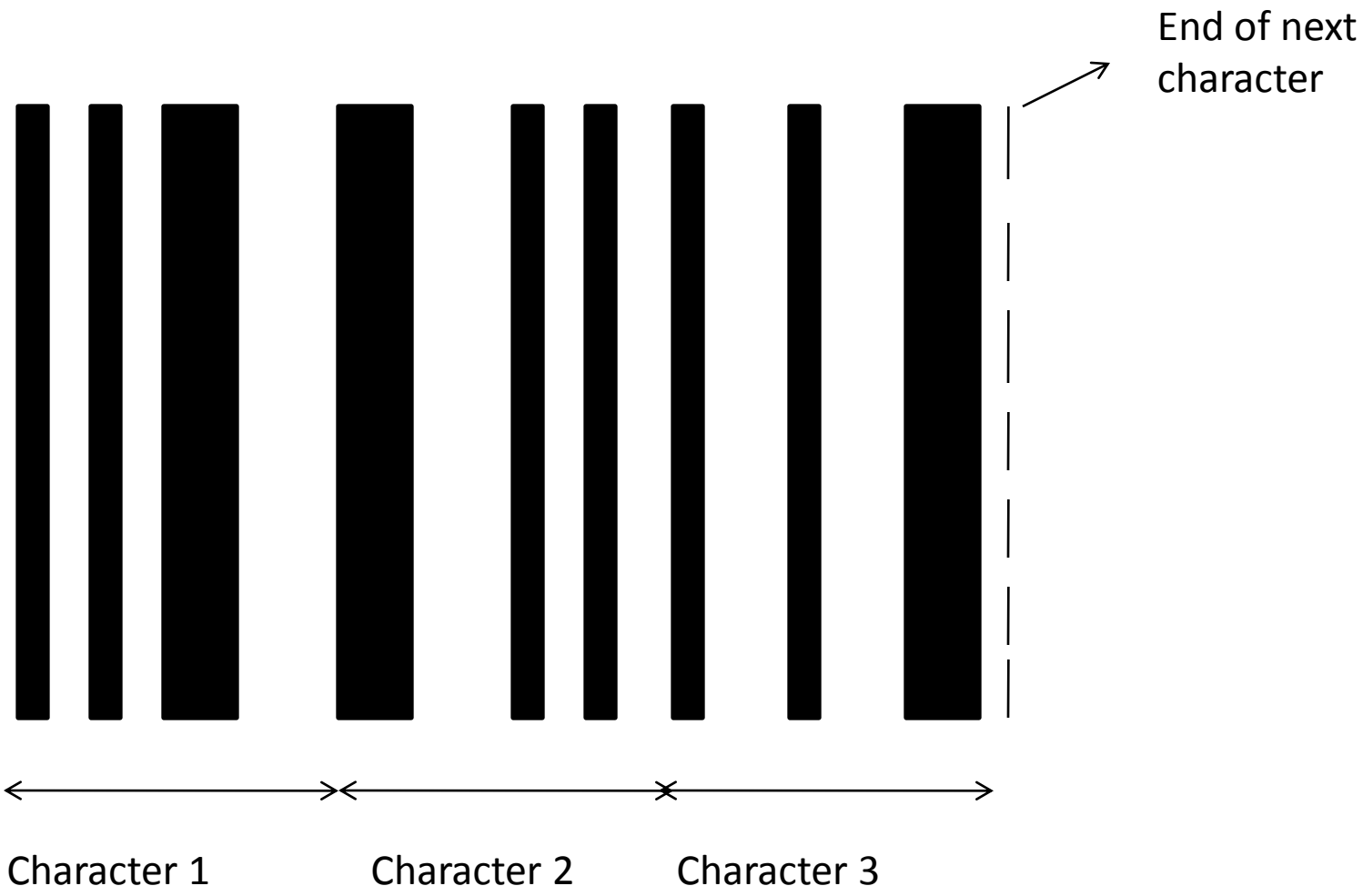
Bar code technology

- Structured to contain a specific piece of information
- It allows real-time data to be collected accurately and rapidly
- Combination of barcode technology with computer and application software improves performance, productivity and profitability
- Two symbologies are used:
  - Discrete symbology
  - Continuous symbology

Discrete Symbol



Continuous Symbol



Types of bar codes

Linear barcodes (1D)

Matrix barcodes (2D)

Linear barcodes

- **A linear, 1D barcode** is made up of a series of bars of different specified widths. The number of bars used in the code are defined by the type of code used
- Linear code meets the requirements as these are the codes commonly used throughout the retail and manufacturing industries, easily created with simple technology/fonts and easily generated and referenced within most barcode software packages.

Matrix barcodes

- **Matrix barcode is a 2D barcode** that consists of cells, rather than bars, arranged in a pattern (usually square or rectangular). A matrix code can be incredibly complex storing upto 2,335 characters.
- Matrix barcode is scalable, with commercial applications as small as 300 micrometres and as large as a 1 metre (3 ft) square.

How are bar codes printed?

- To print bar code labels, a label format must be created with software that supports bar coding. To print bar codes on documents or reports, the application software needs to support bar coding or additional programming will be required.
- After the label or form is designed, it needs to be output on a printer that is capable of producing bar codes and supports the specific symbology that is used.

- Because data is encoded using differences between light and dark (and narrow and wide) elements—which are measured in mils, or thousands of an inch—a good quality printer is essential for producing crisp lines and accurate, readable bar codes.

Barcode readers

- Barcode reader (or barcode scanner) is an electronic device for reading printed barcodes. It consists of a light source, a lens and a light sensor translating optical impulses into electrical ones.

Types of Barcode readers

- Pen-type readers
- Laser scanners
- CCD readers
- Camera-based readers
- Omni-directional barcode scanners
- Cell phone cameras and Smartphone

Benefits of Barcoding

- Represent unique identity of a product.
- Accuracy of data input. (Error free)
- Aid effective management of resources
- Saves labour my avoiding manual system.
- Real time data collection.
- More accurate despatch.

Emerging Technologies: RFID

What is RFID??

- Radio Frequency Identification (RFID)—describes technologies that use radio waves to automatically identify people or objects.

- RFID tags can be applied to or incorporated into a product, animal, or person, for the purpose of identification using radio waves.

RFID Journal. http://www.rfidjournal.com/faq/16/49 Viewed March 30, 2008

Parts to the RFID System

- There are three parts to a RFID system:

1. Antenna
   - Provides a means of communication and energy to communicate with RFID tag
   - RFID tag passes through field of the antenna and the RFID tag detects the activation signal from the antenna causing the RFID tag to transmit the information on the microchip to the transceiver.
     - Permanently affixed to a surface or handheld
2. Transceiver
   - Has a decoder to interpret the data
3. RFID Tag (Transporter)
   - Programmed with information

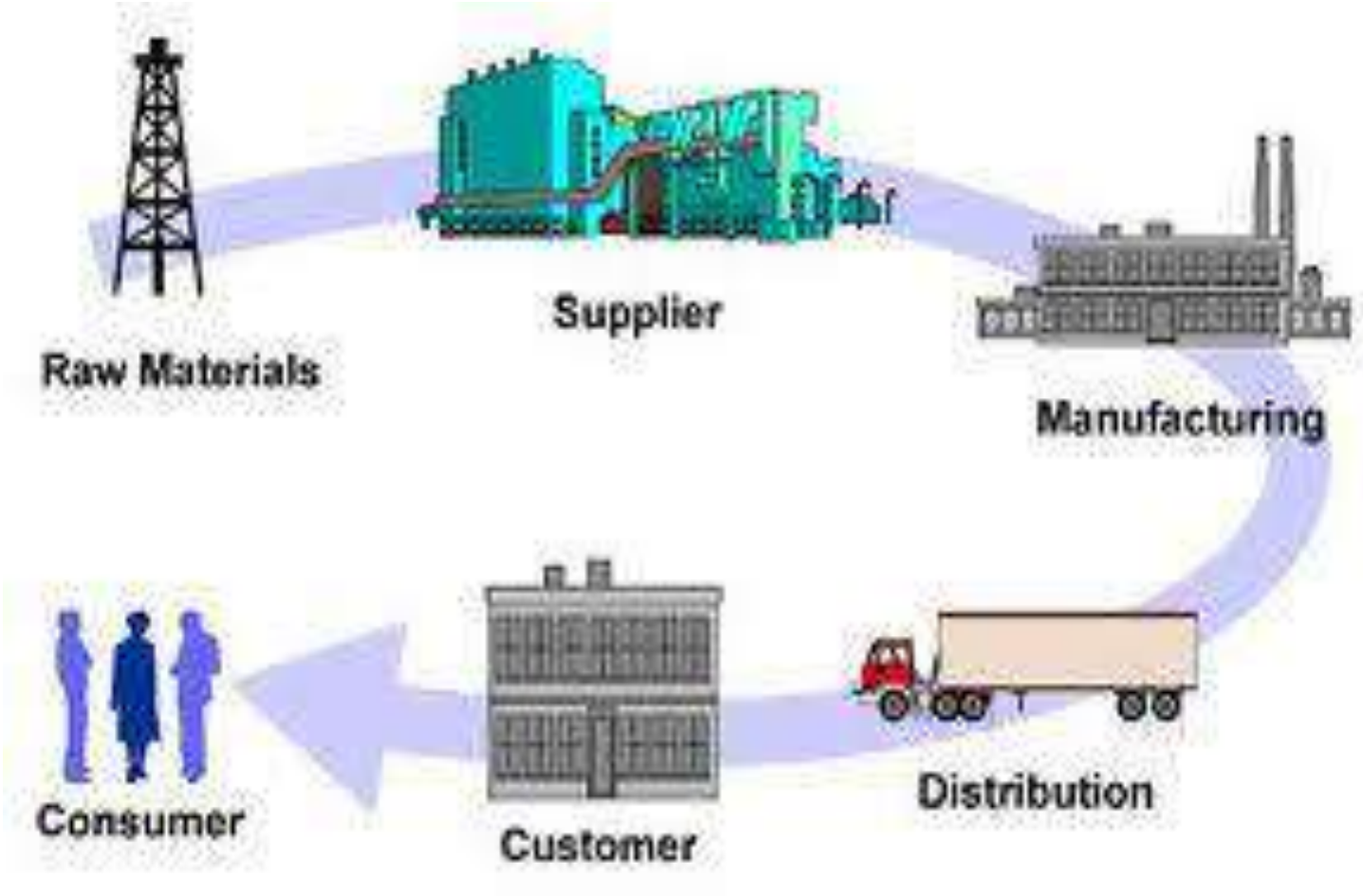
"How RFID Works," http://www.technology.com/ct/Technology-Article.asp?ArtNum=2 Viewed March 31, 2008

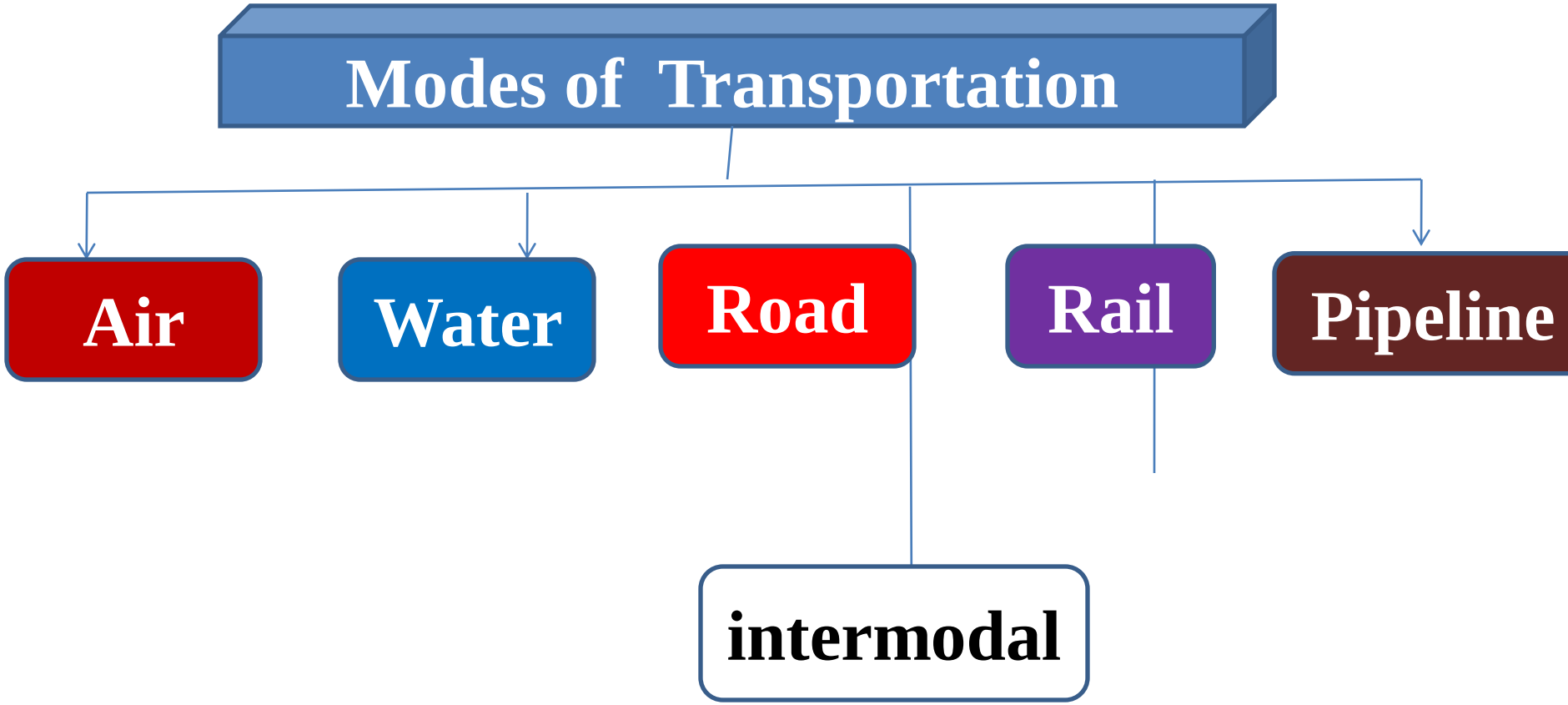
Transportation

Transportation

- Transportation refers to the movement of product from one location to another as it makes its way from the beginning of supply chain to the customer.
- Transportation is an important supply chain driver because products are rarely produced and consumed in the same location.

Role of transportation in supply chain management




Modes of Transportation
Air
Water
Road
Rail
Pipeline
intermodal

Road Transport Advantages:

❖It is a relatively cheaper mode of transport as compared to other modes.

❖ It is a flexible mode of transport as loading and unloading is possible at any destination. It provides door-to-door service.

❖ It helps to carry goods from one place to another, in places which are not connected by other means of transport like hilly areas.

Limitations of Road transport:

❖Due to limited carrying capacity road transport is not economical for long distance transportation of goods.

❖ Transportation of heavy goods or goods in bulk by road involves high cost.

Air

- Air freighting is commonly used by companies who work with short lead times, or advanced service levels.
- Air transportation is best suited for small, high- value items or time sensitive emergency shipments that have to travel a long distance.
- Air carriers normally move shipments that have high value but light weight .

Advantages of Air transportation:

- It is the fastest mode of transport.
- It is very useful in transporting goods to the area, which are not accessible by any other means.
- Reduces lead time.
- Improved service levels

Disadvantages:

- It is relatively more expensive mode of transport.
- It is not suitable for transporting heavy and bulky goods.
- It is not suitable for short distance travel.

Rail

- Rail transport uses freight trains for the delivery of merchandise. Freight trains are usually powered by diesel, electricity and steam.
- Rail is suited for bulk shipment of products like fertilizer, cement, food grains and coal etc. from the production plant to the warehouses.

Advantages of Rail transportation:

- It is relatively faster than road transport.
- It is suitable for carrying heavy goods in large quantities over long distances.
- Cost effective.

Limitations of Rail transportation:

- It is relatively expensive for carrying goods over short distances.
- It is not available in remote parts of the country.
- It provides service according to fixed time schedule and is not flexible for loading or unloading of goods at any place.

Water

- Water transport uses ships and large commercial vessels that carry billions of tons of cargo.
- water transport is used primarily for the movement of large bulk commodity shipments and it is the cheapest mode for carrying such load.
- Water transport is particularly effective for significantly large quantities of goods that are non-perishable in nature and for cities or states that have water access.

Advantages of water transportation:

- It is a relatively economical mode of transport for bulky and heavy goods.
- The cost of maintaining and constructing routes is very low most of them are naturally made.
- It promotes international trade.

Disadvantages:

- The depth and navigability of rivers and canals vary and thus, affect operations of different transport vessels.
- It is a slow moving mode of transport and therefore not suitable for transport of perishable goods.
- It is adversely affected by weather conditions.
- Sea transport requires large investment on ships and their maintenance.

Pipeline

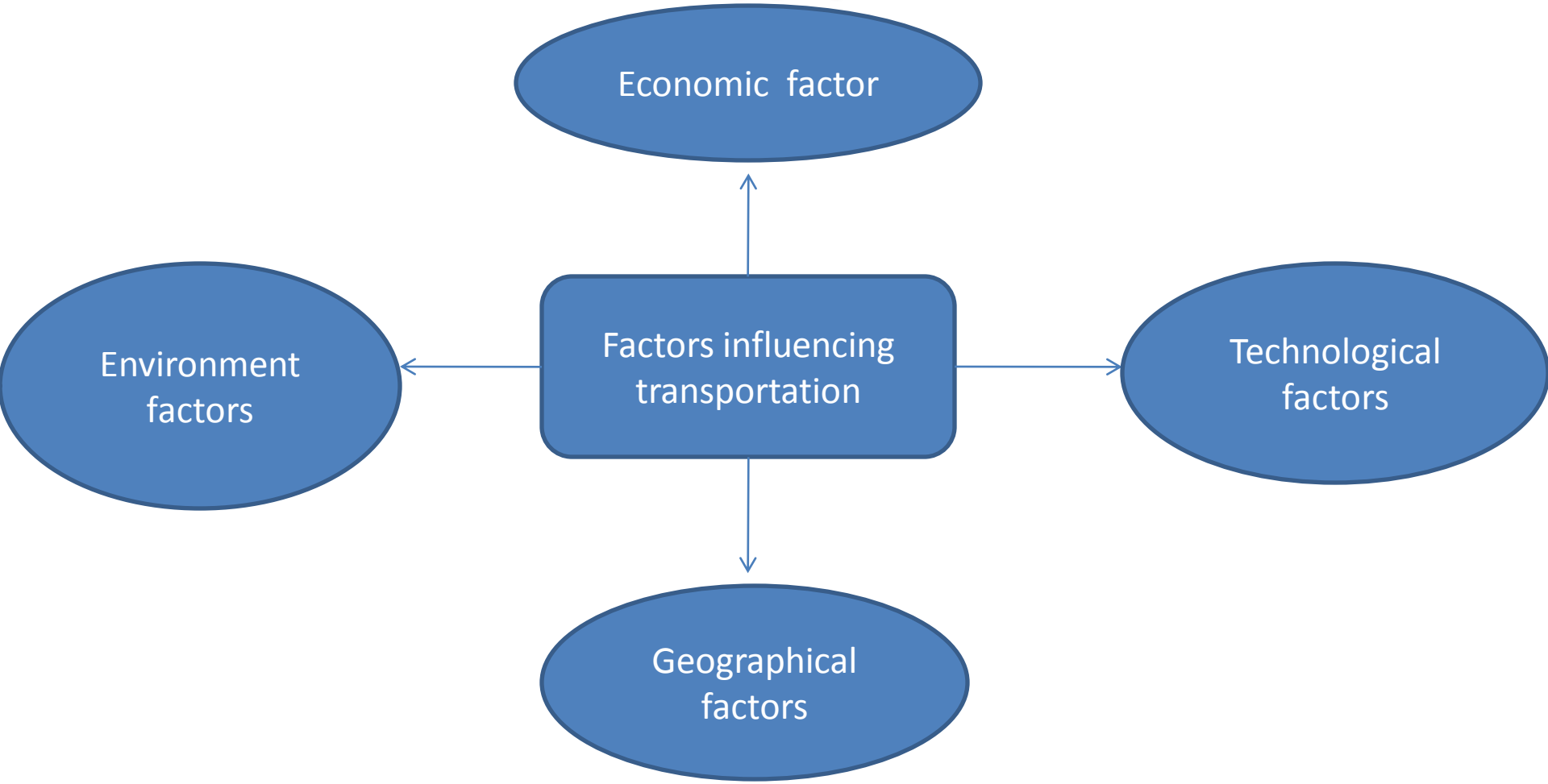
- Pipeline is used primarily for the transport of crude petroleum, refined petroleum products and natural gas.
- It include a significant initial fixed cost in setting up the pipeline and related infrastructure.
- Pipelines are not flexible and this scope is limited with respect to commodities.
- Unable to transport a variety of materials

Intermodal Transportation

- Intermodal Transportation is use of more than one mode of transport for the movement of shipment from origin to its destination.
- Intermodal operation is used two or more mode of transport to take the advantage of inherent economies of each and thus provide the integrated service at lower cost.

For example: truck/water/rail.

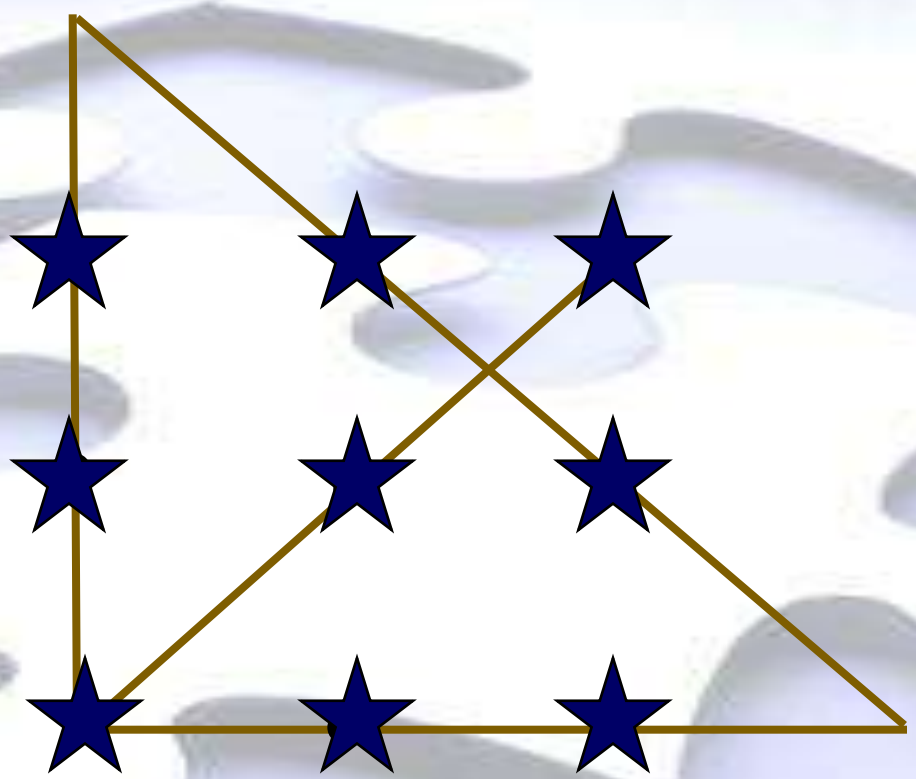
Factor influencing transportation in supply chain



Complaint Handling

Complaint Handling

The Nine Stars Exercise



Objectives

By the end of this module you will be able :

- Explain the nature of complaints
- List and describe the different types of complaints
- List different complainers and how to communicate with them
- Describe ways to resolve complaints using the LAST sequence
- Explain the process for documenting complaints and giving feedback
- Describe ways to build customer loyalty through effective complaint handling

Definition of Complaint

…statement of unhappiness - a statement expressing discontent or unhappiness about a situation

Expectations not met……..

Guest

Why do Guests not return?

Personal Attitude

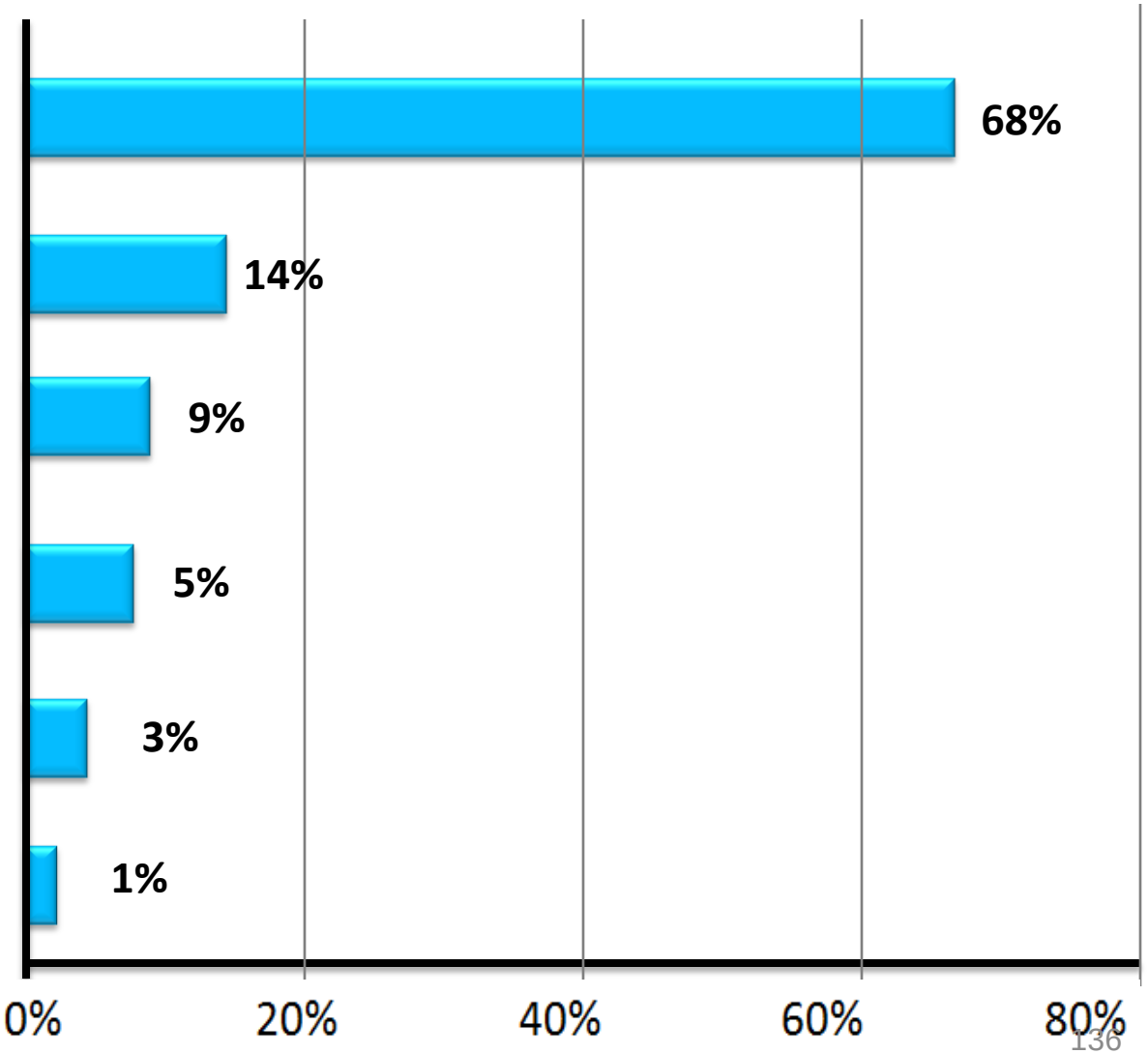
Merchandise

Price

Other Contacts

Move away

Die



Welcoming Complaints

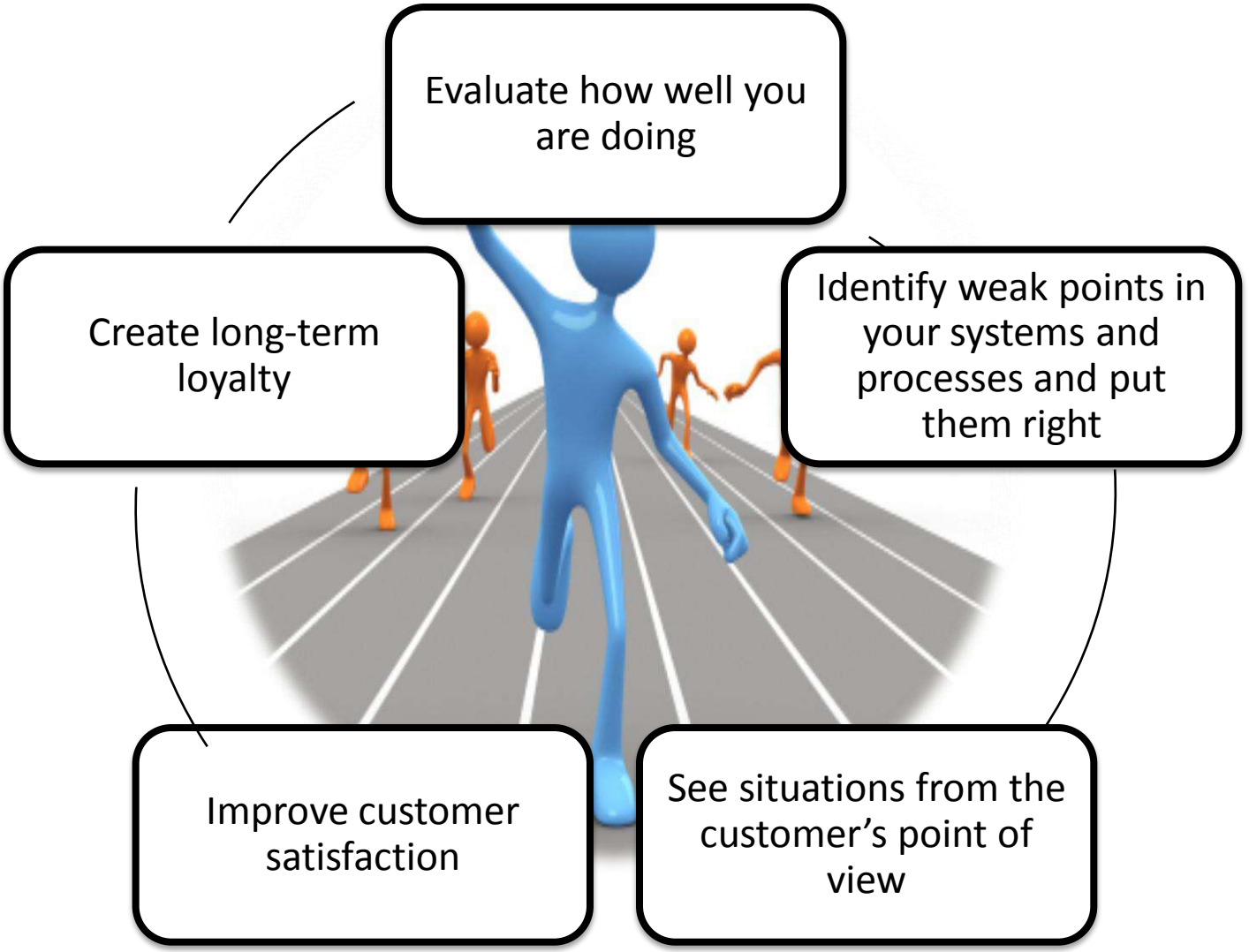
Complaint

Improvement

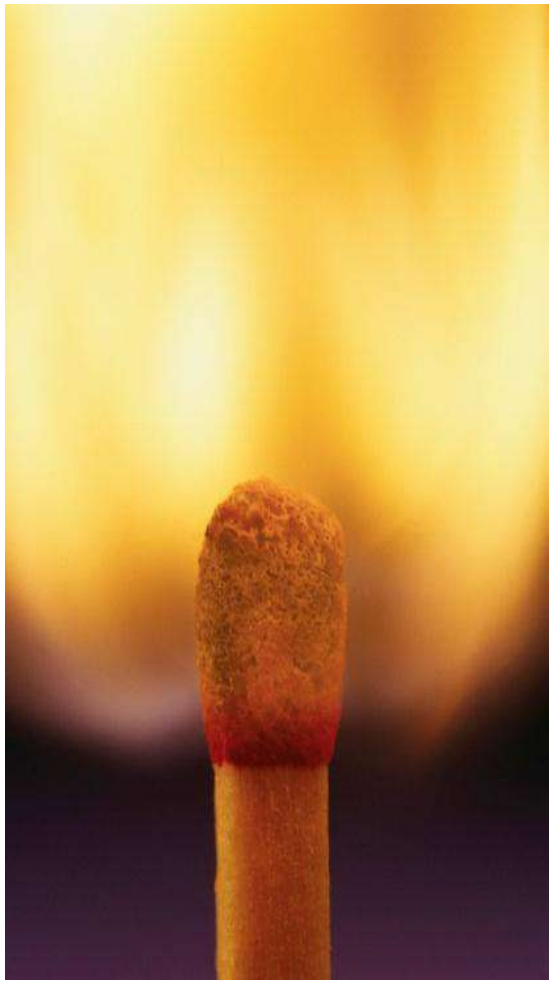
Satisfied Customer

Improved Business

Complaints are Opportunities to…



LAST Approach to handling complaints



- **L** — Listen Attentively
- **A** — Apologize & Empathize
- **S** — Solve the issue on hand (Solution provided)
- **T** — Thank the Guest

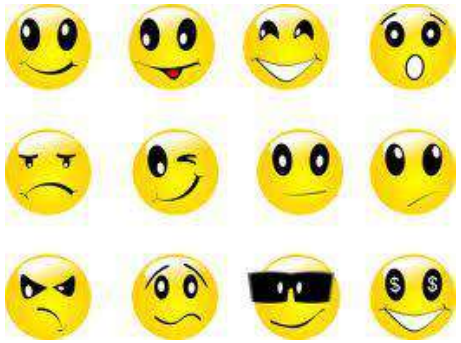
Managing Effective Communication

Managing Effective Communication

- **Clear and calm voice**

- **Speak normally**

- **Body language**
  - Eye contact
  - Calm facial expressions
  - Calm, friendly gestures
  - Professional posture
  - Concerned and interested



- **Involve the guest**

Behaviors to Avoid

- Confrontational situations

- Forceful hand gestures

- Entering guest's personal space

- Defensive body language

- Raising your voice

- Bad language

Always Remember…

If we don’t take care of our customers someone else will.

Retail SCM

Retail supply chain

- retail supply chain is the processes you use to get your products to your consumers. It encompasses everything from obtaining the raw materials to make your product to delivering that product into your shoppers’ hands. It encompasses everything from obtaining the raw materials to make your product and delivering that product into your shoppers' hands as fast as possible

Challenges in retail supply chain

- Tight profit margin.
- Meeting customer expectations.
- Operational efficiency.
- Quality & compliance.
- Omni channel integration
- Automation and Robotics
- Forecasting and Predictive Analytics
- High customer expectations

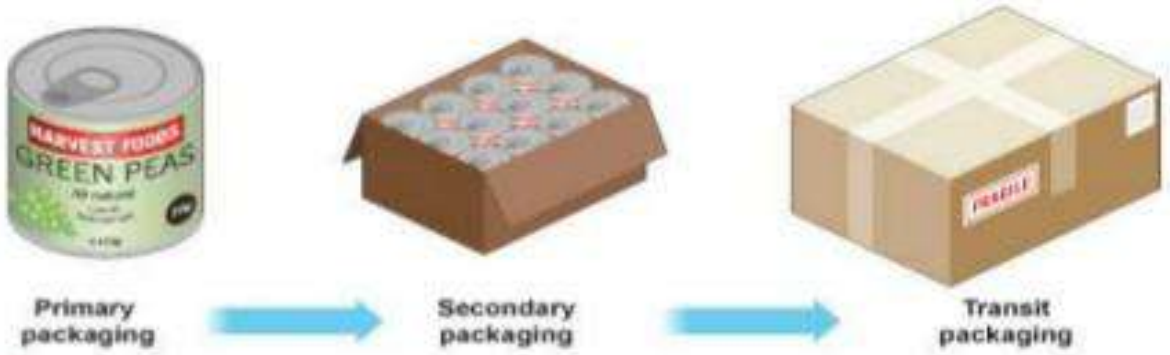
PACKAGING

Packaging is a process of providing container or wrapper to the product for its safety and transportation, the SCM and packaging are the two integral elements exists together

Packaging and handling services minimize product damage and distribution delays. ... Our services, and the support of our experienced teams, also means you can stay focused on your core business. Ensure the quality, integrity and timely delivery of your cargo.

ON THE BASIS OF LEVEL

- Primary Packaging.
- Secondary Packaging
- Tertiary or transit Packaging



❑ Function of Packaging

The basic functions of packaging are

- ➢ Containment:
- ➢ Protection:
- ➢ Preservation
- ➢ Information
- ➢ Convenience