CHAPTER 1

Introduction to Supply Chain Management

WHAT IS SUPPLY CHAIN MANAGEMENT?

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Transpiration & storage activities

Raw Materials Supplier

Intermediate Component manufacturers

End-product manufacturers (or focal firm)

Wholesalers, distributors

Retailers

Product & services flow

Recycling and return (reverse logistics)

Information/planning/activity/activity integration
Raw Materials

- A **raw material**, also known as a **feedstock** or **unprocessed material**, is a basic material that is used to produce goods, finished products, energy, or intermediate materials which are feedstock for future finished products.

- Raw materials are materials or substances used in the **primary production** or **manufacturing of goods**.

- Raw materials are often referred to as **commodities**, which are bought and sold on commodities exchanges around the world.
Classification of Raw Materials

Materials

Primary Material
- mineral
- Fossil fuel
- Water
- Air
- Coke

Secondary Material
- Chemical fiber
- Chemical rubber
- Synthetic dyestuff
- Synthetic resin
Classification of Raw Materials

1. Origin
   - Mineral
   - Vegetable
   - Animals
Classification of Raw Materials

![Diagram showing classification of raw materials into renewable and non-renewable resources, with examples of each category.]
Classification of Raw Materials

Chemical composition

- Inorganic
  - Ores
  - Mineral
- Organic
  - Oil
  - Coal
  - Natural gas
Classification of Raw Materials

State of matter

- Solid: Ores, mineral, coal, shale, peat
- Liquid: Water, brines, oils
- Gaseous: Air, natural gas
Intermediate Materials, Supplies, and Components

• Intermediate Chemicals and Allied Products: Chemical products that have been processed but require further processing before they are ready for sale to the final demand user as well as finished chemical products purchased by businesses as inputs for their operations.

• This includes products such as industrial chemicals, paints, soaps and cosmetics, drugs and pharmaceuticals, and biological products like blood and vaccines.
Intermediate Materials, Supplies, and Components

• Intermediate Fuels and Related Products and Power: Fuels and related products that have been processed but require further processing before they are ready for sale to the final demand user, as well as fuels and power purchased by businesses as inputs for their operations.

• This includes petroleum gas and other petroleum products, natural gas, and electric power.
Intermediate Materials, Supplies, and Components

- **Intermediate Furniture and Household Durables**: Furniture and other household items that are used over a long period of time that have been processed but require further processing before they are ready for sale to the final demand user, as well as products that are purchased by businesses as inputs for their operations.
- This includes products such as major **appliances**, **carpeting**, and **home electronic equipment**.
Intermediate Materials, Supplies, and Components

- **Intermediate Hides, Skins, Leather, and Related Products**: Hides, skins and leather products that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished leather products that are purchased by businesses as inputs for their operations.

- This includes products such as finished leathers used in manufacturing shoes and bags.
Intermediate Materials, Supplies, and Components

• **Intermediate Lumber and Wood Products:** Lumber and wood products that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished lumber and wood products that are purchased by businesses as inputs for their operations.

• This includes soft and **hardwood lumber**, **plywood**, and other wood products such as wood pallets and flooring. **This does Not include paper and pulp products.**
Intermediate Materials, Supplies, and Components

• Intermediate Machinery and Equipment: Machinery and equipment that are purchased by businesses as inputs for their operations.

• This includes products such as handtools, farm equipment and parts, mining equipment and parts, and computers and computer parts.
Intermediate Materials, Supplies, and Components

• Intermediate Metals and Metal Products: Metals and metal products that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished metal products that are purchased by businesses as inputs for their operations.

• This includes products such as steel castings, wire, refined copper, hardware and hand tools, furnaces, and fabricated metal products.
Intermediate Materials, Supplies, and Components

- **Intermediate Nonmetallic Mineral Products**: Products made from **Nonmetallic minerals** that have been processed but require further processing before they are ready for sale to the final demand user, as well as mineral products that are purchased by businesses as inputs for their operations.
- This includes products such as **sheet glass, cement** and **concrete blocks, bricks, ceramic tiles** and **cut stone**.
Intermediate Materials, Supplies, and Components

- Intermediate, Processed Foods and Feeds: Foods and feeds that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished foods and feeds that are purchased by businesses as inputs for their operations.
- This includes products such as cereals and flours, meats, dairy products, canned or dried fruits and vegetables, beverages and fats and oils.
Intermediate Materials, Supplies, and Components

• Intermediate Pulp, Paper, and Allied Products: Pulp and paper products that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished pulp and paper products that are purchased by businesses as inputs for their operations.

• This includes products such as woodpulp, newsprint, paperboard, paper bags, and particleboard. This also includes textbooks and other professional or technical books that are purchased by businesses as inputs, as well as commercial printing and publishing.
Intermediate Materials, Supplies, and Components

- **Intermediate Rubber and Plastic Products**: Rubber and plastic products that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished rubber and plastic products that are purchased by businesses as inputs for their operations.
- This includes rubber products such as **tires**, **rubber belts** and **hoses**, and **synthetic rubber**, and plastic products such as **plastic packaging** and **plastic construction products**.
Intermediate Materials, Supplies, and Components

• Intermediate Textile Products and Apparel: Woven or machine-knitted fabrics and apparel that have been processed but require further processing before they are ready for sale to the final demand user, as well as finished fabrics and apparel that are purchased by businesses as inputs for their operations.

• This includes products such as cotton and wool yarns, woven cottons, wools and synthetics, knits, and finished fabrics are, for example, sold to apparel manufacturers, as well as finished apparel that is sold to businesses as uniforms.
Intermediate Materials, Supplies, and Components

- **Intermediate Transportation Equipment:** Equipment used for transportation by air, land or sea, that are not for sale to the final demand user and are purchased by businesses as inputs for their operations.

- This includes products such as **truck and car parts**, **aircraft engines** and **parts**, and **boat parts**.
Intermediate Materials, Supplies, and Components

- **Miscellaneous Intermediate Products:** Products that are *Not included in any other Intermediate Product category* that have been processed but require further processing before they are ready for sale to the final demand user, as well as products that are purchased by businesses as inputs for their operations.

- This includes products such as *sporting goods, tobacco products* and *jewelry*. 
The Origins of Supply Chain Management

- **1950s**: Traditional mass manufacturing
- **1960s**: Inventory management and cost containment
- **1970s**: JIT, TQM, BPR, supplier & customer alliances
- **1980s**: Supply chain relationship formation and extension
- **1990s**: Increased supply chain capabilities
- **2000s**: Future
Important Elements of Supply Chain

• There are four important elements of Supply Chain:

1. Purchasing
   a) Supplier alliance
   b) Supplier management
   c) Strategic sourcing

2. Operations
   a) Demand management, MRP, ERP, JIT, TQM

3. Distribution
   a) Transportation management
   b) Customer relationship management
   c) Network design
   d) Service response logistics

4. Integration
   a) Coordination/integration activities
   b) Global integration problems
   c) Performance measurement
Purchasing Element

• Traditional Approach
  – Multiple sourcing
  – Competitive bidding
  – Short-term contracts

• These practices against suppliers focus on price of the product instead of the capabilities of the suppliers and how they can contribute to the long term competitiveness of the organization.

• The most critical issue in purchasing is supplier management.
  – Supplier evaluation
  – Supplier certification
Operations Elements

- During a calendar year, seasonal demand variations commonly occur.
- Firms can predict these variations occur, based on historic demand patterns, and use forecasting techniques to guide weekly and monthly production demand.
Operations Elements

• Controlling and managing inventory is one of the most important aspects of operations.
• Firms can and typically do have some sort of material requirement planning (MRP) software system to manage their inventory.
• These systems can be linked throughout the organization and its supply chain partners using enterprise resource planning (ERP) systems.
• Another common form of inventory management system is through the use of Just-in-time (JIT) production system.