
SUPPLY CHAIN MANAGEMENT

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Synapse Global Institute comprises a team of accomplished young professionals who have excelled in diverse fields, including Certified Public Accountancy, Civil Engineering (Registered), and Supply Chain Management (Registered)

The Institution embodies the concept of a synapse, serving as a vital connection between educators and learners to enable seamless knowledge transfer

Bridging educators' expertise with learners' ambitions, it delivers accessible, transformative education tailored for today's interconnected world, shaping futures through innovation and excellence

PREFACE

The dynamic and interconnected nature of today's business environment has elevated the importance of effective supply chain management (SCM) as a critical determinant of organisational success. This book, *Supply Chain Management*, has been developed to provide a practical, comprehensive, and student-friendly resource for learners, professionals, and practitioners pursuing excellence in the field of supply chain and logistics.

The content has been meticulously structured to align with the latest educational standards and professional practices in Kenya and beyond. Drawing on real-world insights, contemporary challenges, and emerging trends, the book offers a holistic understanding of SCM concepts ranging from procurement, inventory management, distribution, and sourcing decisions to ICT integration, customer value, and sustainability.

Each chapter is crafted to enhance conceptual clarity while providing practical guidance. Case-based illustrations, sector-specific examples, and analytical discussions help bring theory into real-world application, making this an indispensable guide for students, business owners, logistics professionals, and policymakers.

This work is a result of the collaboration between Synapse Global Institute and CPSP-K/MSK/BCOM Evans Langat. It is our belief that this book will serve as a valuable academic and professional tool that promotes not only learning but also the transformation of supply chain systems across diverse sectors.

We trust that this book will contribute meaningfully to your academic journey and professional growth.

Evans Langat, CPSP-K, MSC, BCOM
Synapse Global Institute
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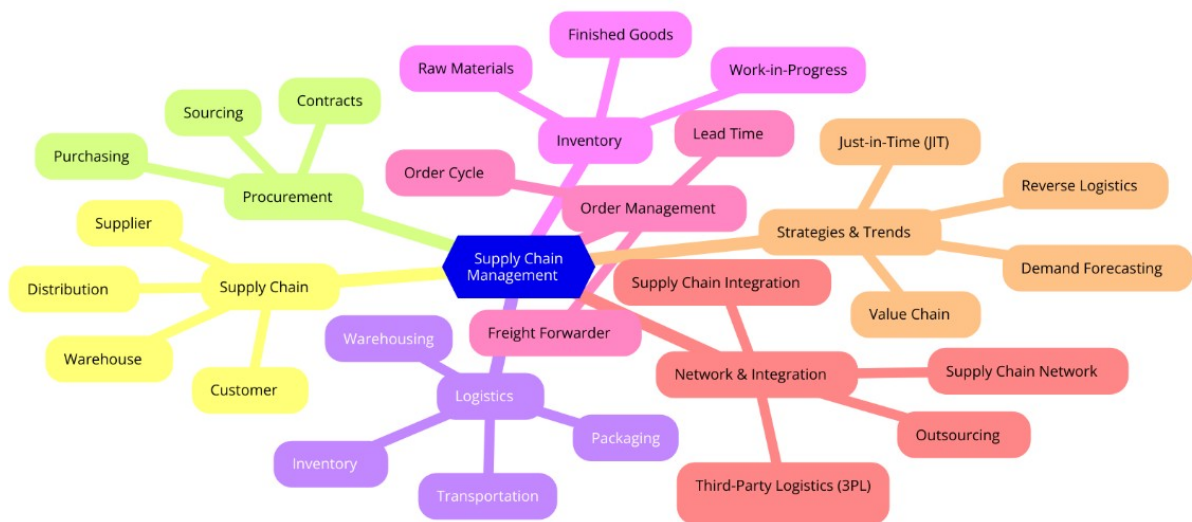
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CHAPTER 1: INTRODUCTION TO

SUPPLY CHAIN MANAGEMENT

1.1 Terms Used in Supply Chain Management



Supply Chain Management (SCM) involves the planning, execution, and control of activities related to the flow of goods, services, information, and money from raw material suppliers to the final consumer. It is important to understand the key terms used in this field, as they form the foundation for all other topics in supply chain management.

Below are common terms used in supply chain management, explained in a simple and practical manner:

Supply Chain

This is the entire network involved in producing and delivering a product or service. It includes suppliers, manufacturers, transporters, warehouses, retailers, and customers.

Supplier

A supplier is a person or company that provides raw materials, components, or services needed to produce a product.

Procurement

Procurement refers to the process of sourcing and purchasing goods and services from suppliers. It includes selecting suppliers, negotiating contracts, and placing orders.

Logistics

Logistics involves the movement and storage of goods. It includes transportation, warehousing, packaging, and inventory control.

Inventory

Inventory refers to the goods and materials a business holds for the purpose of resale or production. It includes raw materials, work-in-progress, and finished goods.

Distribution

Distribution is the process of delivering the finished goods to the final consumer. It includes warehousing, transportation, and delivery.

Warehouse

A warehouse is a storage facility where goods are kept before they are distributed or sold.

Lead Time

Lead time is the amount of time it takes for an order to be placed, processed, and delivered.

Order Cycle

The order cycle is the time between placing an order and receiving it. It includes order processing, picking, packing, shipping, and delivery.

Freight Forwarder

A freight forwarder is an agent who arranges transportation of goods on behalf of the seller or buyer. They often handle customs documentation and tracking.

Supply Chain Network

This is the system of organisations, people, technology, activities, information, and resources involved in moving a product or service from supplier to customer.

Supply Chain Integration

This means that all parts of the supply chain (such as suppliers, manufacturers, and distributors) work together smoothly as a single system.

Just-in-Time (JIT)

JIT is an inventory system where materials or products are received only as they are needed, reducing storage costs and waste.

Outsourcing

Outsourcing is when a company hires another firm to perform certain tasks or services instead of doing them in-house, for example, transport or packaging.

Third-Party Logistics (3PL)

This refers to using an external company to manage logistics services such as transportation, warehousing, and order fulfilment.

Demand Forecasting

Demand forecasting is the process of predicting how much of a product customers will need in the future.

Reverse Logistics

This involves the movement of goods from the customer back to the seller for returns, repairs, recycling, or disposal.

Value Chain

The value chain is the series of activities that a company uses to add value to a product, from design and production to delivery and after-sales service.

1.2 Types of Supply Chains

In this section, we will look at different types of supply chains. Each type has its unique structure and functions, depending on the nature of the business and the products involved. Understanding these types will help you appreciate how supply chains operate in real-world scenarios.

i) A Basic Supply Chain

A basic supply chain typically involves the movement of raw materials through to the final product being delivered to the consumer. This type of supply chain focuses on the simple flow of goods and is suitable for products that have predictable demand and standard production processes.

A Basic Supply Chain



1. Supplier

The first step in a basic supply chain is the supplier, who provides raw materials or components required to make the final product. For example, in the case of manufacturing a smartphone, the supplier could provide the raw materials like metals and plastics.

2. Manufacturer

Once the raw materials are received, they are sent to the manufacturer who assembles or processes the materials into a finished product. This could include manufacturing parts, assembling components, or processing raw goods into a product. In the smartphone example, the manufacturer would assemble the components into the final product.

3. Distributor

After the product is manufactured, it is often sent to a distributor. The distributor's role is to ensure that the products are stored in warehouses and then sent to retailers or wholesalers. The distributor may also handle the logistics and transportation of the goods.

4. Retailer

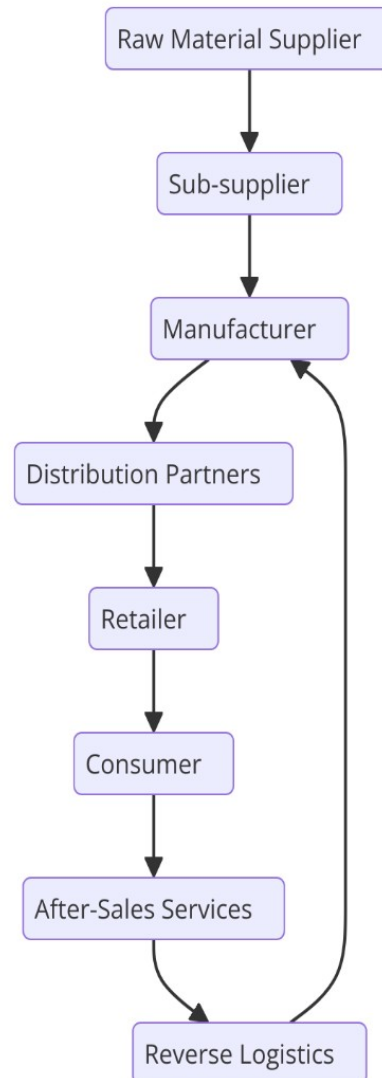
The retailer is the point at which the consumer can purchase the product. Retailers can be physical stores or online platforms. The product reaches the retailer after passing through the distributor or wholesaler.

5. Consumer

Finally, the product is purchased by the consumer. The consumer is the end-user who buys the product, completing the supply chain cycle.

In a basic supply chain, each player has a clear and simple role, and the flow of goods is predictable and linear. It is often used in industries that deal with mass-produced, standardised products, where demand is relatively stable.

ii) Extended Supply Chain



An extended supply chain goes beyond the basic supply chain to include additional players and stages that further support the production and delivery of products. These extra steps are often necessary for more complex products or services that require a higher level of coordination and involve multiple layers of suppliers, distributors, or partners.

In an extended supply chain, various stages and parties come into play, including additional suppliers, sub-suppliers, logistics partners, and other collaborators. The flow of goods, information, and money becomes more intricate, with more stakeholders involved in ensuring that the product reaches the consumer.

1. Raw Material Supplier

The process begins with the raw material supplier, similar to the basic supply chain. These suppliers

provide the basic materials needed for manufacturing. In an extended supply chain, there may be multiple levels of suppliers, each supplying different materials or subcomponents.

2. Sub-supplier

Sub-suppliers provide specific components or raw materials that the primary supplier needs. For example, a metal supplier may need to source its raw material from a mining company. This adds another layer to the supply chain, which can affect cost, quality, and delivery timelines.

3. Manufacturer

The manufacturer receives raw materials and components from suppliers and sub-suppliers and produces the final product. In an extended supply chain, manufacturers may rely on several different suppliers to ensure they have all the components needed to create the product. This increases the complexity of logistics and inventory management.

4. Distribution Partners

Instead of relying on a single distributor, the extended supply chain often uses multiple distribution partners. These partners may include wholesalers, third-party logistics (3PL) providers, or freight companies. These partners help to manage the transportation, warehousing, and delivery processes.

5. Retailer

The retailer remains the point of sale for the end consumer, but in the extended supply chain, retailers often have to deal with several distributors and manufacturers to ensure they have the right products available at the right time.

6. Consumer

As in the basic supply chain, the consumer is the end user who purchases the product. However, the extended supply chain ensures that the product is delivered with greater flexibility, often involving more touchpoints before reaching the consumer.

7. After-Sales Services

In an extended supply chain, after-sales services such as maintenance, repairs, and returns management are essential components. These services are often outsourced to third-party companies who specialise in managing product lifecycles and customer satisfaction after the sale.

8. Reverse Logistics

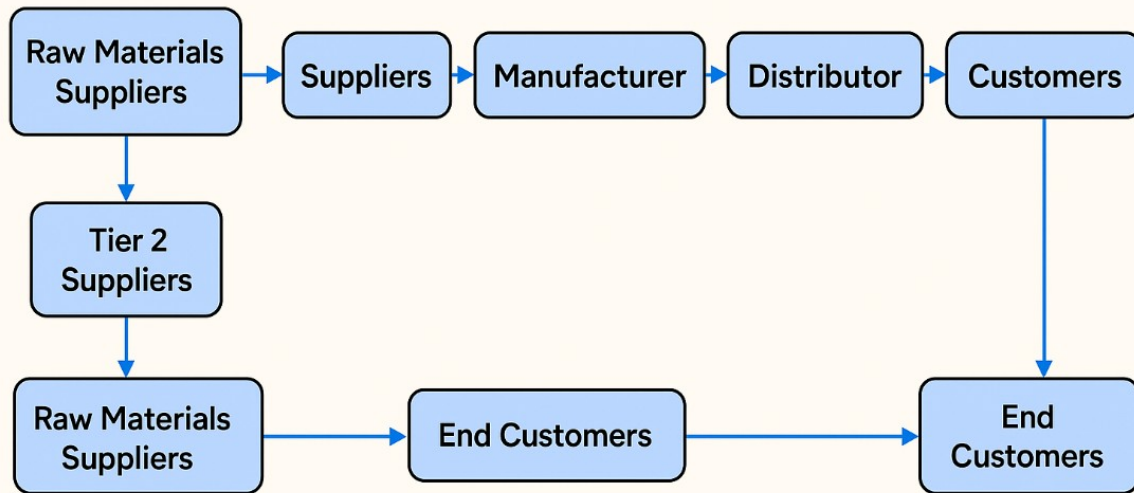
This is the process of managing returns, recycling, and disposal of products. In the extended supply chain, reverse logistics becomes more critical as products pass through multiple stages before reaching the consumer. Companies may use third-party partners to handle returns, repairs, or product recalls.

iii) Ultimate Supply Chain

The ultimate supply chain represents the most advanced and comprehensive form of supply chain management. It integrates all stages and parties, from raw material suppliers to the end consumer, and includes a wide array of activities to ensure that products and services are delivered in the most efficient, cost-effective, and responsive way possible.

An ultimate supply chain typically includes not only suppliers, manufacturers, and distributors but also incorporates real-time data flow, global reach, and advanced technologies such as automation, artificial intelligence (AI), and the Internet of Things (IoT). It is designed to be highly flexible, responsive to changes in demand, and capable of managing complex, multi-tier networks.

Ultimate Supply Chain



1. Raw Material Supplier

Like other types of supply chains, the ultimate supply chain begins with the raw material supplier. However, in this case, there could be a vast global network of suppliers. These suppliers are chosen based on their ability to provide high-quality materials at competitive prices, often with the help of advanced data analytics.

2. Sub-suppliers and Component Suppliers

In the ultimate supply chain, there can be several layers of suppliers, sub-suppliers, and component suppliers that provide essential parts or materials. These suppliers often operate in multiple regions and countries, and the supply chain integrates them seamlessly, sometimes through the use of automated systems or enterprise resource planning (ERP) software.

3. Manufacturers

Manufacturers in an ultimate supply chain may operate in multiple regions and produce products through lean or flexible manufacturing processes. They often use cutting-edge technology, such as robotics, 3D printing, or artificial intelligence, to optimize production and reduce costs. The focus is on maximizing efficiency and reducing waste.

4. Distribution Centres and Third-Party Logistics (3PL)

An ultimate supply chain makes extensive use of multiple distribution centres and third-party logistics providers. These logistics companies manage everything from warehousing and inventory management to transportation, tracking, and real-time data reporting. Technology plays a major role here, with GPS systems and advanced forecasting tools helping to ensure timely and accurate deliveries.

5. Retailers and E-commerce Platforms

Retailers in the ultimate supply chain operate through a multi-channel system, including both brick-and-mortar stores and online platforms. The system is highly integrated,

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