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## **Logistics and Supply Chain Management**

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# QUESTION PAPER

December – 2023

(Solved)

## LOGISTICS AND SUPPLY CHAIN MANAGEMENT M.M.P.O.-5

**Time: 3 Hours ]**

**[ Maximum Marks : 100**

**Note:** (i) Answer any five questions. (ii) All questions carry equal marks.

**Q. 1.** “Managers have now become more conscious of the potential of Physical Distribution Method (PDM) and recognize that logistical systems should be designed with the total function in mind.” Explain in view of the statement, the concept of total approach to Physical Distribution Method (PDM).

**Ans. Ref.:** See Chapter-1, Page No. 8, Q. No. 4.

**Q. 2.** What do you understand by “bullwhip effect”? Explain main factors that contribute towards increase in variability in supply chain.

**Ans. Ref.:** See Chapter-3, Page No. 30, ‘Bullwhip Effect’.

**Q. 3.** Explain IT as enabler of Supply Chain Management (SCM). Also, state the challenges in implementing it in SCM.

**Ans. Ref.:** See Chapter-5, Page No. 50, ‘IT as an Enabler of SCM’, ‘The Goals and Advantages of Implementing IT in SCM’ and Page No. 51, ‘Challenges in Implementation IT in SCM’.

**Q. 4.** What is meant by Benchmarking? Explain the various challenges faced in implementation of Benchmarking.

**Ans. Ref.:** See Chapter-8, Page No. 74, ‘Introduction’ and Page No. 76, ‘Challenges Faced in Implementation of Benchmarking’.

**Q. 5.** Explain the concept of transportation. Also explain how transportation acts as a vital link in the supply chain.

**Ans. Ref.:** See Chapter-10, Page No. 92, ‘Transportation Briefly’ and Page No. 93, ‘Transportation as a Vital Link in the Supply Chain’.

**Q. 6.** “Demand driven supply networks are supply chains driven by the voice of the customers”. Comment on the statement.

**Ans. Ref.:** See Chapter-13, Page No. 126, ‘Demand Driven Supply Networks: (DDSN’s) – Emerging Trends’ and Page No. 134, Q. No. 1.

**Q. 7.** Write short notes on the following:

(a) Efficient Consumer Response (ECR)

**Ans. Ref.:** See Chapter-2, Page No. 15, ‘Efficient Consumer Response (ECR)’.

(b) Supply of alliances

**Ans. Ref.:** See Chapter-4, Page No. 40, ‘Supply Alliances’.

(c) Benefits of adopting e-SCM

**Ans. Ref.:** See Chapter-6, Page No. 65, Q. No. 1.

(d) Direct Product Profitability

**Ans.** Direct Product Profitability (DPP) is a valuable technique that helps in assigning all the relevant costs and allowances to a specific product. Instead of calculating an average cost for the entire product range, DPP assigns all the distribution costs, such as storage, transport, and others, to an individual product. This allows for monitoring and comparing the actual costs of distributing a product to a standard cost determined using DPP, similar to a budgetary system.

By using DPP, areas of inefficiency throughout the entire logistics operation can be easily identified. In addition, the technique can help in identifying the costs of specific products to individual customers, thus providing retailers with invaluable information for effective marketing strategies. Retailers can use the DPP technique to allocate more shelf space for high-turning products and reduce the amount of space for those products that move slower and yield lower profits.

Overall, DPP is an effective technique that helps in allocating costs and provides valuable information to retailers, enabling them to optimize their marketing strategies and maximize their profits.

(e) Haulee’s Uncertainty Framework

**Ans. Ref.:** See Chapter-13, Page No. 127-128, ‘Hau Lee’s Uncertainty Framework’.



# QUESTION PAPER

June – 2023

(Solved)

## LOGISTICS AND SUPPLY CHAIN MANAGEMENT (M.M.P.O.-5)

Time: 3 Hours ]

[ Maximum Marks : 100

Note: (i) Answer any five questions. (ii) All questions carry equal marks.

**Q. 1. What do you understand by Physical Distribution Management? Explain “the systems or total approach to Physical Distribution Management (PDM)”.**

**Ans. Ref.:** See Chapter-1, Page No. 3, ‘Physical Distribution Management (PDM)’.

**Q. 2. “Technology advancements in Electronic Data Interchange (EDI), the Internet and the World Wide Web (www) had led the rise of supply chain design and management as prominent operational paradigms.” Explain, in view of statement, the impact of information technology on Supply Chain Management (SCM).**

**Ans. Ref.:** See Chapter-5, Page No. 50, ‘Structure of IT’s Effect on Supply Chain Management’, ‘IT as an Enabler of SCM’ and Page No. 52, ‘Emerging and New IT Solution for Supply SCM’.

**Q. 3. “The best known benchmarking system is the five-part Supply Chain Operations Reference (SCOR) model.” Explain the SCOR Model in brief.**

**Ans. Ref.:** See Chapter-8, Page No. 76, ‘Benchmarking the Supply Chain: The SCOR Model’.

**Q. 4. Explain how financial service sector has incorporated the innovations in supply chain management.**

**Ans. Ref.:** See Chapter-12, Page No. 110, ‘Financial Services Sector’ and Page No. 113, Q. No. 2.

**Q. 5. “Logistics run throughout the process of supply chain and therefore in order to access the performance of supply chain, total logistics cost is of utmost importance.” Comment on the statement.**

**Ans. Ref.:** See Chapter-7, Page No. 68, ‘Total Cost Analysis’ and ‘Cost Drivers’.

**Q. 6. “A Fourth Party Logistic (4PL) adds value to the entire supply chain through reinvention, transformation and execution.” Comment on the**

**statement. Also, explain the operating models that a 4PL company uses to deliver supply chain solutions.**

**Ans. Ref.:** See Chapter-14, Page No. 138, ‘Fourth Party Logistics’.

**Q. 7. Write short notes on the following:**

**(a) Push Based Supply Chain**

**Ans. Ref.:** See Chapter-3, Page No. 28, ‘Push Based Supply Chain’ and Page No. 33, ‘Push Based Supply Chain’.

**(b) Characteristics of effective measurement system**

**Ans.** The Performance Measurement System (PMS) can be characterized by the following criteria:

- The measures that an organization uses should provide a balanced view of the business.
- The framework of measures should give a clear and concise overview of the organization’s performance.
- The performance measures should be multi-dimensional.
- The Performance Measurement Matrix (PMM) should provide comprehensive mapping.
- The performance measures should be integrated across the organization’s functions and hierarchy.
- The performance measurement system should provide data for monitoring past performance and planning for future performance. This means that the measures should measure both the results and the drivers of those results.

**(c) Supplier Quality Management**

**Ans. Ref.:** See Chapter-4, Page No. 40, ‘Supplier Quality Management’.

**(d) Demand Driven Supply Networks (DDSNs)**

**Ans. Ref.:** See Chapter-13, Page No. 134, Q. No. 1.

**(e) Electronic Supply Chain Management**

**Ans. Ref.:** See Chapter-5, Page No. 52, ‘Electronic Supply Chains’ and Chapter-6, Page No. 59, ‘Introduction’.



# Sample Preview of The Chapter

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# LOGISTICS AND SUPPLY CHAIN MANAGEMENT

## Logistics and Supply Chain Management – An Introduction

1

### INTRODUCTION

A lot of information travels both inside and outside of various organizations. Raw materials are procured from suppliers, and finished products are then delivered to customers. This task is performed by transportation. In other terms, logistics refers to the activity of transferring materials from production to customers. The definition of a supply chain is as follows: “A supply chain is a network of organizations and activities through which materials are moved from initial suppliers to final customers.” For various products, there are distinct supply chains.

### CHAPTER AT A GLANCE

#### LOGISTICS AND SCM

The management of a company’s various logistical stages, including the acquisition of materials, manufacturing, storage, distribution, and customer support, is referred to as the supply chain. The supply chain idea should be viewed holistically, that is, as the complete system from the mine to the point at which a good or service is used. All the businesses engaged in the production of a specific commodity or service, as well as all the logistical steps carried out by these businesses, must be included in this group or network. The supply chain is a network that connects and interconnects all of the companies engaged in a production process’s various supply chains.

As a result, the supply chain is a complex object because it includes decision-makers from numerous companies, sometimes with no direct relationship to one another and in dissimilar geographic locations, yet the decisions they make are interdependent. Consequently, a system of information is required that can connect the various links in the chain and enable open contact between them.

Integrated logistics refers to two connected but distinct endeavours:

**1. Logistics Management:** Physical distribution management, materials management, and internal inventory movement are the main components of logistical operation.

**2. Coordination of Logistics:** Forecasting, order processing, operational planning, and product procurement or material demands planning is all a part of logistics coordination. Effective communication flows are used to achieve this integration.

The manufacturing organization has reached the next logical step in the evolution of its competitiveness thanks to supply chain management, which has also added and this is crucial a concern for the flow of materials into and out of the organization. Supply chain management emphasised the need for cooperation to optimise the entire system by integrating vendors with end users. As a result, supply chain management is the process of designing, planning, and putting into action changes to the ‘total’ material flow’s structure and performance in order to increase value, reduce expenses, improve customer service, and gain a competitive advantage. In essence, a truly “systems” strategy to the organization and its direct and indirect trading relationships was created by the addition of supply chain management to the marketing model.

#### DEVELOPMENT OF LOGISTICS

The importance of transportation as a significant cost driver has increased in response to rising interest rates and rising energy costs. Additionally, because of industry globalization, transportation costs have become a more pressing concern for many organizations. This has primarily had two effects on operations. First, organizations are searching for novel ways to set themselves apart from their competitors



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by offering superior products from other countries. Second, as businesses purchase and sell goods more frequently overseas, the supply chain between them and the companies they do business with grows longer, more expensive, and more complicated. To completely take advantage of global opportunities, excellent logistics administration is required. Logistics management has experienced a new growth thanks to information technology.

In logistics, the system approach is a key idea. A system in and of itself is logistics. It is a network of interconnected tasks designed to control the smooth movement of people and goods along the logistical channel. According to the system approach, every function or activity must be understood in terms of how it affects and is impacted by other factors and processes with which it interacts. One won't be able to see the big picture or how one action affects or is affected by other activities if they see it in isolation, the theory goes. Essentially, the culmination or result of an activity is more than the sum of its parts.

### THE ROLE OF LOGISTICS IN THE ECONOMY

The economy benefits from logistics in two important ways. Initially, one of the biggest corporate expenses is logistics. Hence, logistics play a significant role in the economy by increasing the efficiency of logistics operations. The movement and flow of many economic transactions are supported by logistics, which is a crucial task in facilitating the sale of almost all goods and services.

Utility creation is one of the main ways that logistics create value. In terms of economics, utility refers to the worth or usefulness that an item or service has in satisfying a need or want. Utilities come in four different flavours: Form, Possession, Time, and Location. The process of making the good or service or placing them in the right form for the client to use is known as form utility. Because a consumer can actually take possession of a good or service through a credit agreement or a loan, this feature adds value to the product or service.

Logistics have a direct impact on the time and place utility. The value increased by having an item on hand when needed is known as time utility. Location Utility refers to having the good or service where it is needed. The core of the two utilities offered by logistics, time and place, are the five rights of logistics.

### LOGISTICS AND COMPETITIVE PERFORMANCE

Porter divided customers, suppliers, and a company into the distinct but connected activities that produce value using a tool known as the value chain.

To pinpoint and comprehend the precise source of competitive advantage and how it relates to customer value, consider the value chain concept. Value is the price a client is willing to pay for the goods and services that a business offers. The price the client pays over the company must spend to provide the good or service is the value added. The five areas of primary action involved in competing in any industry are outlined by Porter such as inbound logistics, operation, outbound logistics, marketing and service.

A significant source of competitive advantage can be obtained through efficient logistics management. In each situation including competition, success depends on two factors. The cost advantage comes first, followed by the value advantage. Value advantage is pursued by a different plus over competing offerings, while cost advantage is attained through increased productivity. To get both benefits, logistics management can be essential. In many sectors, logistics costs are such a large portion of overall costs that they can be significantly reduced by completely reengineering the logistics process. Companies can achieve value advantage through service differentiation.

To get both benefits, logistics management can be essential. In many sectors, logistics costs are such a large portion of overall costs that they can be significantly reduced by completely reengineering the logistics process. Companies can achieve value advantage through service differentiation. The majority of organizations have always thought of themselves as distinct entities that must compete with other organizations in order to thrive. But, if it results in a refusal to cooperate in order to compete, such a mentality may be counterproductive. The concept of supply chain integration lies at the heart of this seemingly incongruous idea. Integration of the supply chain binds a company to its clients, vendors, and other channel participants.

Integration of the supply chain binds a company to its clients, vendors, and other channel participants. As a result, it incorporates their interactions, behaviours, tasks, procedures and locations. The goal is to increase SC's usefulness and efficacy for end users.

A model of the evolution of supply chain is as follows:

**Stage 1:** The "baseline" structure with a largely informal approach to departmental administration is where integration begins. Processing material requirements and short-term routine planning are part of this level of progression. Simply put, the material inventories result from management techniques that are reactive. Employees must be able to respond to failure and manage as best they can.

**Stage 2:** The structure reflects the conventional supplier management model. The business divisions frequently work independently. The allocation of the annual budget and the control of departmental costs are the main priorities of the Stage 2 organization.

**Stage 3:** In contrast to the “grenade over the entire” strategy of the first two types, the organization is internally integrated and shows a far larger level of interest in the material flow processes from suppliers to customers. The internal supply chain components that the organization can influence and control are integrated. In parallel, groups of people who were formerly subordinates of different departments work together to synchronise demand information, production schedules, and material requirements using planning tools used throughout the business.

**Stage 4:** The business is starting to understand the advantages of real supply chain management, including the ability to coordinate all factory activities, interface the factory with suppliers, and increase customer satisfaction. These are conditions, the internal collaborative and participatory environment is expanded upstream and downstream, and the official recognition of supply chain management planning. The factory, which is “customer oriented” rather than “product oriented,” attempts to collaborate with important clients and suppliers in order to understand better how to deliver value and customer service. Medium-term plans for the organization and its supply chain are included in this type of company’s comprehensive internal development processes.

#### **PHYSICAL DISTRIBUTION MANAGEMENT (PDM)**

Making sure the product is in the right location at the right time is the goal of physical distribution management. PDM is now understood to be a crucial component of supply chain management as a whole. PDM can be optimised by using business logistical methods to reduce expenses and increase customer satisfaction. It serves little purpose to significantly reduce the cost of distribution if, in the long run, revenues are lost due to disgruntled customers. Similar to this, it is not economically sensible to provide a degree of service that does not actually satisfy the needs of the client and reduces profits. A physical distribution manager’s fundamental conundrum is how to strike a balance between expense and service.

Physical Distribution Management is concerned with the movement of products from the time an order is received until the customer receives them. Along with transportation, PDM closely coordinates with purchasing, order processing, material management,

and warehousing. To deliver the degree of service that the customer expects at a price the business can afford all these areas must be managed so that they work well together.

#### **Components of PDM**

**1. Order Processing:** The first of the logistical process’ four steps is order processing. The speed at which orders are processed directly affects wait times. The sales section receives orders from the sales team. If the supplier performs adequately, many businesses create regular supply routes that are fairly stable over time. Contracts are frequently created, and throughout the duration of the contract, repeat purchases are routinely placed that are included in the original contract. If this is followed through to its logical conclusion, ordering is essentially eliminated, and “partnership sourcing” results. The speed of purchase processing is a key consideration for buyers when evaluating their suppliers. Stock levels and delivery times can be immediately updated by a good computer order processing system, giving management a quick and accurate picture of the sales situation. Order processing procedures that are intended to accelerate the order processing cycle are also essential goals.

**2. Inventory:** Stock management, also known as inventory, is a crucial component of PDM since stock levels directly influence service levels and customer satisfaction. The best stock price depends on the kind of market the company operates. Few businesses can claim that they never run out of goods, but if this happens frequently, more effective rivals will gain market share. Identifying the re-order point is crucial. Holding stock below the re-order mark could eventually result in a stock-out, whilst maintaining excessive stock levels is wasteful and expensive.

**3. Warehousing:** Several businesses can run well with their own on-site warehouses, from which products are sent directly to clients. It makes more sense to strategically place warehouses across the nation when a company sells products that are frequently purchased but in tiny quantities. Bulk transportation is an option for getting goods from the manufacturing location to the warehouses where they are stored and await distribution to clients. Large retail chains use this approach; however their warehouses and transportation are owned and run by logistics professionals instead of by them.

**4. Transportation:** The largest distribution expense is typically the cost of transportation. As a result of its direct relation to weight or the number of units, it is frequently simple to compute. The mode of transportation chosen from among the available

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options must be carefully regulated for costs, and this choice must be evaluated frequently. Goods should be appropriately protected from harm in transit by the chosen mode of transportation. In addition to reducing income, frequent claims raise insurance costs and annoy clients, threatening future business.

**The Systems or ‘Total’ Approach to Physical Distribution Management**

Physical Distribution Management aims to maximise each individual effort that contributes to the distributive function so that a shared goal can be achieved. This kind of distribution management is known as the “systems approach,” and the integration of these tasks is one of Physical Distribution Management’s key features.

Below mentioned are the ways in which the individual distribution and logistics cost elements can make the total logistics cost.

**1. Storage Cost:** Due to the requirement for greater stock coverage, more storage space, more management, etc., storage costs will raise as the number of depots rises.

**2. Delivery Cost:** The cost of delivery from the depot to the customer, or secondary transportation, is what this will be concerned with. The secondary mileage and delivery cost decrease as the number of depots increases.

**3. Trunking Cost:** This is the main transportation expense for supplying goods in bulk from the main finished goods warehouses or production centres to the depots. This cost will increase along with the number of depots.

**4. Inventory Cost:** The following are the primary components of inventory holding costs:

(a) **Capital Cost:** This is the finance charge, which represents a company’s current cost of capital.

(b) **Service Cost:** That is the cost of stock management and insurance.

(c) **Risk Cost:** Risk cost is caused by theft, stock deterioration, damage, and stock obsolescence.

(d) **System Cost:** These expenses cover a range of information or communication needs, from order processing to load assembly lists.

**PRINCIPLES OF SUPPLY CHAIN MANAGEMENT**

The administration of all crucial company operations across numerous supply chains is known as SCM. The demand-driven nature of the supply chain is its most crucial tenet. The chain approach is covered in the second premise. Linkage between links is the third supply chain management principle. The fourth supply chain concept is concerned with the efficiency of

chain flows. The fifth principle focuses on maximising supply chain resources to provide goods or services to the final client while ensuring their utmost happiness.

**How Does SCM Works?**

A system that connects a business with its customers and suppliers is the supply chain management. Forecasts and orders, which come from and concerning the customer, are transmitted to the business and its suppliers. Planning allows for the refinement of this data into precise manufacturing and purchasing goals. A value-added inventory flow is started as materials and goods are bought, and it ends with the ownership of the finished product being transferred to the consumer.

The key processes for integrated SCM are:

**1. Customer Relationship Management:** This is the procedure to determine the important clients. Many businesses are starting to treat a customer as a value-independent entity as the consumer takes centre stage. With these important clients, product and service agreements that detail the performance level are negotiated.

**2. Customer Service Management:** The practise of managing demand must strike a balance between client demands and the firm’s supply capabilities. An effective demand management system reduces uncertainty and ensures effective information flows throughout the supply chain by utilising point of sale data and “key” client information.

**3. Customer Order Fulfilment:** The achievement of a high order fill rate is essential for effective SCM. It takes integrating a company’s manufacturing, distribution, and transportation plans to properly complete an order.

**4. Manufacturing Flow Management:** Orders are processed on a just-in-time basis with a minimum lot size, which necessitates the ability to undertake rapid changeover to enable mass customisation. In a company environment where the consumer is king, production processes must combine efficiency with customer pleasure.

**5. Procurement:** The purchase and transportation of goods from suppliers to production or assembly facilities, warehouses, or retail establishments is known as procurement.

**6. Product Development and Commercialization:** The company needs to accelerate product creation in order to stay competitive. Customers and suppliers must be included in the product creation process for this.

**7. Return Channel:** The same chance to build a long-lasting competitive advantage exists when the