



INDIAN INSTITUTE OF MATERIALS MANAGEMENT

June 2015

Post Graduate Diploma in Materials Management

Paper 17 (Old & New)

ADVANCED SUPPLY CHAIN MANAGEMENT

Date: 19.06.2015

Max. Marks 100

Time: 2.00 p.m. to 5.00 p.m.

Duration 3 hours

Instructions

1. The question paper is in three parts
2. Part A is compulsory. Each sub question carries one mark.
3. In Part B answer any 3 questions out of 5. Each question carries 16 marks
4. Part C is a case study with sub questions and it is compulsory.

Total marks-32

Total marks-48

Total marks-20

PART A

(1 x32 = 32 marks)

Q. 1. Fill in the blanks.

- a) _____ shelf _____ practice results in more stock outs.
- b) _____ flow is nothing but starting from the raw materials to the end product to the customer.
- c) A _____ is nothing but integration of internal and external functions.
- d) A _____ is a group of organizations doing trading at a market-place.
- e) _____ logistics is the movement of material associated with storing, transporting, and distributing goods to its customers.
- f) Truck, rail, water, pipeline and air are transportation _____ options.
- g) Packing manages the _____ of materials.
- h) The _____ is the amount of time between the placing of an order and the renewed availability, after the receipt, of the goods ordered.
- i) The _____ point is the interface between push-based stages and pull-based stages.
- j) Plan, source, make, deliver and return are the five components of _____.
- k) In a supply chain, the location of slow moving stock is indicated by supply chain responsiveness _____.
- l) A _____ shows the links between organizations and how information and materials flow between these links.

Q. 2. State True or False

- a) Logistics is the commercial activity of transporting goods to customers.
- b) A warehouse is a planned space for the storage and handling of goods and material.
- c) Cargo Safety and Security and Environmental Protection are not the functional areas of logistics.

- d) GDP is the total dollar value of all goods and services produced over a specific time period.
- e) SCM is the movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption.
- f) Green logistics describes all attempts to measure and minimize the ecological impact of logistics activities.
- g) Reverse logistics stands for all operations related to the reuse of products and materials.
- h) Outbound logistics is the management of transport and storage for finished goods dispatched by a business.
- i) Modern warehousing lays emphasis on flow of speed and flexibility of materials.
- j) Inbound logistics addresses the bulk movement of material or subassemblies.
- k) Warehousing activities relate to warehouse layout, design, automation etc.
- l) A storage depot is a type of warehouse.

Q. 3. Match the following:

- | A | B |
|-------------------------------------|--|
| 1. Bullwhip effect | a. Supply chain performance measure |
| 2. Customer service level | b. the uncertainty caused from distorted information flowing up and down the supply chain. |
| 3. Supply chain balanced score card | c. number of units ordered per order line |
| 4. Stock keeping units | d. includes metrics aligned to company's strategic objectives. |
| c | |
| 5. Disturbance on supply chain | e. Supply chain operations reference model |
| 6. Total supply chain performance | f. Forrester effect mapping |
| 7. Logistics function | g. Selective inventory control |
| 8. Customer priority rules | h. Equipment, People and Decisions |

PART B

48 marks

(Answer any three. Each question carries 16 marks)

- Q4.** A) What is VED and FSN classification? Explain with suitable examples.
B) Discuss different types of lead time in supply chain.

- Q5.** A) Explain the various components and delays in the supply chain with examples.
B) Discuss important inbound logistical strategies.

- Q6.** A) Explain the term "Supply Chain" and its importance to Cost Management.
B) Discuss the importance of information technology in supply chain management.

- Q7.** A) Discuss the five essential elements of integrated supply chain management.
B) Define e-supply chain and describe its characteristics and components with examples..

Q.8. Write Short Notes **any four**.

4 x 4 = 16 marks

- A) In-bound and out-bound logistics
- B) Upstream and down-stream supply chain
- C) Bull-whip effect and pull system
- D) International supply chain
- E) Balance score card

PART C

20 marks

Q.10 Case Study

The markets and products of an established old-line company were changing radically. The company needed to completely revamp its inventory, manufacturing and product support policies, procedures and practices to reflect basic changes in its product line from large, long lead-time, expensive long-lived engineered systems to relatively low-value, standalone, near-consumer-product class units that support personal computers. It also needed to face up to the need to take the profit hit resulting from disposing of obsolete inventory if it wanted to get the balance sheet into shape and institute a program to pre-vent the buildup of obsolete inventories by disposing of slow movers on a regular basis.

This medium-sized manufacturer of computer peripheral devices was seeking to improve its balance sheet and P&L by reducing inventory and the associated carrying costs, while improving customer service. Often, a cost/performance benchmark can help to pinpoint areas of difficulty. Then, if costs are out of line in an area, a comparison to Best Practices may highlight the business processes that are the basis for the problem.

This company was in the later stages of a transition from relying on the main-frame computer market for most of its sales to small systems (PC) related market. The small systems business was growing while the large systems were holding steady or declining. A logistics cost/performance benchmark showed that corporate logistics costs were almost 7 percent of sales. In dollar costs, they were several times greater than costs of the upper quartile of all industry cost comparison groups.

Transportation costs were below average or in the lowest quartile for all divisions. Warehousing and order processing costs were average or below in all divisions except the one with the highest inventory, and administration costs were about average in two divisions and higher than average in two. The division with the highest inventory had order processing costs one half to ten times higher than the comparison groups. In all divisions, inventory carrying costs were over half of the total logistics costs, an extremely high number. In the benchmark industry comparison groups, inventory carrying costs were typically about 25 percent of total logistics cost. So, while there was room for some improvement in supply chain administration and warehousing costs, the bulk of the problem was in inventory management.

The division with the highest inventory carrying costs was a service and spare parts operation, so it might be expected that inventory and order processing costs would be high, but they were high even against a service parts comparison group. Order processing costs were one half to ten times higher and inventory carrying costs were almost five times as much as the upper quartile companies of that group. The service division was at 10 percent of the average turns of its comparison group.

Despite the high inventory, order entry and administration costs, order cycle time was twice the spare parts comparison group and line fill rate was significantly lower. This indicates product mix problems and the likelihood of large amounts of obsolete and slow-moving inventory.

The comparison to best policies and practices indicated that there were issues in purchasing, materials management, inventory planning and management, and manufacturing operations. A good deal of purchasing was done on consignment, but with a requirement to buy a specified quantity each quarter. Parts were often purchased in large quantities to obtain price breaks. Also, custom parts were often used when a product might have been designed with off-the-shelf parts. This required buying large quantities to make it worth-while for the supplier to tool up to produce the custom items, a high-risk practice in a rapidly evolving high-tech business. Many inventory management and service policies appeared to be carried over from the time when the main-frame-related products were dominant, and the business was building and servicing larger, more complex, specialized, and costly units with a long life. End of product life spares procedures, management of engineering changes, field support practices, and product repair and parts availability policies were all based on a line of large, costly, long-life products.

Manufacturing's performance was judged on lowest unit cost and high over-head absorption, a practice that often leads to overproduction and incorrect product mix. Also, routine, but essentially

unplanned, heavy promotions and “spiffs” by the sales department to “make the numbers” at every month and quarter end had destroyed any normal customer demand pattern that might have existed. The customers were waiting for the promotions that they knew would come before they ordered. These promotions didn’t even necessarily involve products known to be in oversupply, or even in stock. It was just whatever sales decided to promote. The adverse effect of this on production, parts availability, and material and capacity planning, and on the inventories of non-promoted product in stock can easily be seen.

An inventory analysis by division showed that across the board in all divisions, raw materials and purchased parts, finished goods and other (obsolete and slow-moving) inventories were high and turns were low. A set of recommendations for short-term inventory reduction and long-term business process and policy changes were prepared and presented to management.

In purchasing and materials management, it was recommended that the total purchasing power of the corporation be leveraged to obtain more favorable purchasing and consignment agreements by centralizing the purchasing function. At the same time, local materials management functions would be strengthened to improve requisitioning and materials usage and upstream supply chain partnerships would be established to improve material flow and reduce purchased parts inventories.

In inventory planning and management, a centralized logistics function was recommended. This organization would own all finished goods inventory and have responsibility for its distribution. Logistics would also develop written policies and procedures for inventory planning, management and reporting; implement an integrated forecasting and inventory planning business process and information system; and perform the forecasting and inventory planning process. All inventories would be managed more intensively to avoid excess and obsolete and active inventories would be deployed and re-deployed based on the forecast requirements.

There also was a need to get the promotion process under control to avoid sudden unanticipated demand on the plants and to move the slow-moving product. Even if the process of period-end promotions were to be continued, they needed to be planned. Planning the promotions even four to six weeks ahead, instead of springing them on the manufacturing plants at mid-month for month-end delivery, would produce a vast improvement. Changing manufacturing performance criteria from lowest unit cost and high absorption to meeting the schedule in time and quantity also needed to be done to ensure proper inventory control and improved service levels.

Questions:

1. Discuss the major problems associated with the supply chain of the company.
2. What are the strategies that you would suggest to the company to become proactive in ensuring supply chain efficiency?
