PGDM (IB), 2016-18

International Supply Chain and Logistics Management

IB 402

Trimester – I & IV, End-Term Examination: September 2017

Time allowed: 2 Hours 30 mins **Max Marks:50**

Roll No: _____

Instruction: Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means.** In case of rough work please use answer sheet.

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5 (Short Questions)	5 Marks each	3*5 = 15
B	2 out of 3 (Long Questions)	10 Marks each	3*10 = 20
C	Compulsory Case Study	15 Marks	15
		Total Marks	**50**

SECTION A

Q1. A company is examining two choices for moving its goods from the plant to its depot in eastern India. Truck and rail. The relevant information are as follows

Transport Mode	Transport lead time	Rate (Rs/unit)	Shipment size (units)
Rail	12	20	5000
Road	4	30	500

The company is planning to ship 20,000 units per year. The cost of the product is Rs 500 per unit. Assume the inventory carrying cost to be 20%.
Which mode of transport should the company choose?

Q2.

A. What is the maximum stock level when demand is greater than the replenishment rate?

B. If the total investment in stock is limited, will the best order quantity for each item be greater or less than the economic order quantity?

Q3. Indian companies complain that high logistics costs make their products less competitive in international markets. Identify products that are likely to be significantly affected by the poor logistics infrastructure in India?

Q4. Identify two products each in functional and innovative categories, identify similarities and difference in the way supply chains for these products are managed by their respective firms?

Q5. What are the benefits of cross-docking? What are the difficulties in implementing cross docking? How does cross docking different from transshipment?

SECTION B

Q1.

a. What is the bullwhip or whiplash effect in supply chains? Provide an explanation for the above-used name for this phenomenon. Describe a simple example that clearly illustrates this effect?

b. Within the beer game setting, explain how the performance measurement schemes affects the managerial behavior within the supply chain?

Q2.

a. A regional warehouse purchase hand tools from various suppliers and then distributes them on demand to retailers in the region. The warehouse operates 5 days per week, 52 weeks per year. The following data estimated for one product, namely 1 inch drill ;

Average daily demand =100 drills, Standard deviation of daily demand 30 drills, supplier lead time 3 days, holding cost Rs.9.40 per unit per year, ordering cost Rs.35 per order, Service level 98% (z=2.05), Design inventory policy for this company.

The finance department has instructed the warehouse to reduce the investment in average inventory by half. What are the options available to the manager of the warehouse?

b. Akaga Corporation distributes video game terminals throughout India. The marketing manager estimates the demand for next year to be 500 units per month. The base price of the video game terminal is Rs.500 and cost of placing an order is Rs 5000. The estimated holding cost is 20% of the base price per unit per year. The video game terminal are imported from the suppliers in Japan and delivery lead time is 1 month. Design an inventory policy for Akaga Corp.

   i. If the supplier insisted on a minimum batch size of 1,200 for any order, what should the inventory system be? What is the implication of this minimum batch size to Akaga Corp?

   ii. Akaga realized that monthly demand is not going to be constant and is likely to have mean demand of 500, with standard deviation of 100 units. And the marketing manager want to ensure a 98% service level. Work out the system requirement under both situations (with and without the batch size constraint).

   iii. The marketing manager had some difficulty is explaining the concept of 98% service level to his top management team, so he decided to work with the following promise to the top management. His promised the top management that inventory policy would work towards a target level of two instances of stock outs in a year. Design an inventory policy for the following two situations

      a. No minimum batch size constraint.
      b. Minimum batch size of 1200.

Q3.

a. How can the full set of logistical and cross functional drivers be used to create strategic fit for a PC manufacturer targeting both time-sensitive and price-conscious customers?

b. "Upgrading means acquiring the technological, institutional and market capabilities that allow a value chain actor to improve their competitiveness and move into higher-value activities. In short, upgrading is the process of trading up" in light of the statement please suggest the purpose and the factors supporting the purpose of shift in value chain governance patterns?

SECTION C

Case - Background

Campbell Soup Company, headquartered in Camden, New Jersey, are *veterans* in soup manufacturing in the US. The company was set up in 1869 by fruit merchant Ioseph Campbell and an icebox manufacturer Abraham Anderson. Dr. Dorrance, a chemist trained in Europe joined the company to *give* the first condensed soup in 1897. By eliminating water in the condensed soup, he lowered the costs of packaging, shipping, and storage. 10 ounces of soup was sold for a dime only.

In 1904 itself, the company was manufacturing 21 varieties. It is estimated that consumers in US alone consumed 2.5 billions bowls of the three key varieties-tomato, cream of mushroom and chicken, and the noodle one. Today Campbell manufactures a lot of varieties such as, cream of broccoli, double noodle and creamy chicken noodle. The variants of these soups are present with low sodium, cholesterol, fat, and calories in the range of the healthy request soups. The company has now expanded internationally to China, Japan, Australia, Argentina, and Mexico, etc. It had sales of US$6.1 bn in 2003. It has *developed* variants to adopt to local cultural differences. The company has the mission-'Together we can build the world's most extraordinary food company for nourishing people's *lives everywhere, every day.'* The company, now, also manufactures juices, beverages, sauces, biscuits, and confectionary. Online sales are being done through *netgrocer.com*. The company has stringent quality system standards for all the ingredients, including water, raw materials, and elimination of heavy metal content. Suppliers have stringent requirements to meet particularly good food manufacturing practices and control of purchased raw material.

Customer-focused Supply Chain Plan

In an interview given by Christian Moye, the then Vice-President of Strategic Planning, Global Supply chain of Campbell Soup Co., in January 2003, he admits to having the biggest supply chain challenge in maintaining a balance between cost (on the management side) and customer focus (on the retail and customer side).

The key issues for the company are the product format, product differentiation, product customization, and service customization. The retail distribution channel forms the most part of the distribution channel. Moye says that the company aims to drive efficiencies through better information flow and information sharing through data synchronization and collaborative planning, forecasting and replenishment (CPFR). The company is focusing on case-size optimization as a way of maintaining product choice on the shelf, without adding a lot of inventory, and may be even reducing inventory. The company is getting invoice-accuracy rate higher while looking at the forward side of the supply chain. As far as the backward-end (sourcing) is concerned, the company is focusing on technology-enabled strategic sourcing, e.g., e-procurement comprising e-auctions or Internet-enabled negotiations. As a part of IT investment priorities, Campbell in addition to e-procurement is focusing on network optimization, and also sales and operations planning (S&OP). It intends to join UCCnet (group of standards for e-commerce, created by the Uniform Code Council) and wants to have co-sourcing or aggregated purchasing to get lower cost of raw materials. However, the company does not see much scope of freight consolidation to strive for a common truckload, as the company is already predominantly a truckload kind. The company looks to have DCs in the same locations as other *'big-box' stores* such as Wal-Mart, P&G, Kraft, etc., because of the common geography and population factors. Common retailing/distribution, thus, cannot be ruled out. In 2003, the company did not have a DC in north-east US. The company prefers a near-market, mixing centre DC, which may not give a cost saving for Campbell, but a service improvement. The company finds a real impact of Internet-based EDI on their business and it does not have to pay value-added network (VAN) charges. It would also ensure visibility of transportation. The company joined worldwide retail exchange (WWRE) who helped Campbell

in data synchronization and e-procurement, which would also facilitate CPFR. So, the company does not have to make substantial investments in software and technology.

Moye feels that managing the change in terms of selling the supply chain ideas to the corporate management and the culture in the company has been challenging, but it was not difficult as the lady chief information officer (CIO) got all the supply chain projects approved. The company, however, planned to have a matrix organization rather than a functional silo organization, which is unresponsive to today's business environment.

Issue of Supply Chain Performances

The Campbell Soup company makes products that are very price-sensitive. An important competitive priority for the company is low-cost operations, which extends to the entire supply chain. Campbell operates in an environment with a high degree of certainty. Only 5 per cent of its products are new each year; the rest have been on the market for years, making forecasting of demand easier. Even though Campbell already had high levels of customer service-98 per cent of the time, Campbell's products were available in retailer' inventories-management believed that improvements in costs were possible. It scrutinized the entire supply chain to determine where performance could be improved.

The outcome was a programme called *continuous replenishment,* which reduced the inventories of retailers from an average of 4 weeks' supply to 2 weeks' supply. This reduction amounts to savings to the order of 1 per cent of retail sales. As the average retailer's profits are only 2 per cent of sales, the result was a 50 per cent increase in the average retailer's profits. Because of that increase in profitability, retailers purchased a broader line of Campbell products, thereby increasing Campbell's sales. The programme works in the following way.

- Each morning Campbell uses EDI to link with the retailers.
- Retailers inform Campbell of demands for Campbell products and the current inventory levels in their distribution centres.
- Carnpbell determines which products need replenishment, based on the upper and lower inventory limits established with each retailer.
- Campbell makes daily deliveries of the needed products.

Campbell's environment has a low level of uncertainty, so the company pursued an efficient supply chain design. The implication, however, is that it must avoid actions that would disrupt the supply chain. For example, retailers on the continuous replenishment programme had to forgo forward buying-whereby retailers in the industry often buy excess stock at discounted prices so that they can offer price promotions. Forward buying causes ripples in the supply chain, increasing everyone's costs. That was the case with chicken soup. Campbell would offer deep discounts once a year and retailers would take advantage of them, sometimes buying an entire year's supply. Because of the bulge in demand, the chicken boning plant would have to go on overtime. When that happened, costs in the entire supply chain increased- Carnpbell's production costs increased and retailers had to pay for warehousing large stocks of chicken soup. With the continuous replenishment system, those extra cost are eliminated and everyone wins.

Discussion Questions

1. What do you think are the reasons that Campbell thought that they should improve the performance of the supply chain?
2. What were the key strategic initiatives being planned and focused at Campbell by Christian Moye at the company?
3. What were the aims of the programme of 'continuous replenishment' at Campbell? What were the steps involved?
4. What was the problem encountered with the supply of 'chicken-soup'? How was it tackled by Campbell?