

PGDM (IB), 2018-20
International Supply Chain & Logistics Management
IB 302
Trimester –III, End-Term Examination: March 2019

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. Give a specific example of risk pooling (a) across locations (b) across time and (c) across products. You may select a local auto or FMCG supply chain.

Q2. If a firm is completely vertically integrated, is effective supply chain management still important?

Q3. Consider a firm selecting a supplier of international transportation services. What are the advantages of using a truck load carrier or a package delivery firm such as Safe Express, TNT, UPS etc.

Q4. What companies or supply chains in international markets can you think of that use transshipment strategies. List two differences between inventory pooling and transshipment strategies?

Q5. 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 (days)	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 percent.

1. Which mode of transport should the company choose?

2. Will your answer change, if you realize that the time shown above are average times and that actual time will follow a normal distribution with standard deviation of 4 days?

SECTION B

Q1.

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

Average daily demand 100 drills

Standard deviation in demand 30 drills

Supplier lead time 3 days

Holding cost Rs. 9.40 per unit/year Ordering cost Rs. 35 per order

Service level kept 98% ($z=2.05$)

Design an inventory policy. 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. Under continuous review policy the firm advertise 90% cycle service level for all stock items. Stock is replenished from single supplier who guarantees a lead time of 4 weeks. What reorder level should they use for an item that normally distributed demand with mean 2000 units a week and standard deviation of 200 units. What is the reorder level at 95% and 98% cycle service level?

What is the effect of moving to periodic review method with interval of 2 weeks? (5 marks each)

Z value at 90% 1.29 at 95% 1.65 at 98% 2.05

Q2.

a. Within the same industry, one finds significant differences in the supply chain performance measures across firms. What could possibly explain these differences in performance across firms in the same industry? (4 marks)

b. From a management perspective, how do global supply chain differs from their domestic counterparts? Explain the implications of each one these differences on the bullwhip effects in the supply chain. (4 marks)

c. What effect do the use of third-party logistics providers have on the bullwhip effect of the supply chain? (2 Marks)

Q3.

a. Discuss how supply chain management decisions impact the ability to excel in certain dimensions, specifically consider

a. Product Selection

b. Governance

c. Price and Brand

d. Process flow type (A or V) (4 marks)

b. Agile supply chain and efficient supply chain likely to differ in the way they manage and measure performance. Identify the key areas of differences between the two? (2 marks)

c. Differentiate between container freight stations (CFS) and Inland container depots (ICDs). Which are the incoterms, exporter can use during the logistics operations at an ICD. (4 marks)

SECTION C

Metro Transport Distribution - A Core Competence of Trading/Retailing Companies

The Metro Group (Metro) is one of the world's largest trade and retailing companies present in 34 countries in Europe, Asia and Africa. Metro executes a multi-channel distribution system by operating different sales formats including Metro/Makro Cash & Carry for wholesale, Saturn and Media Marketing for consumer electronics, real for groceries and the department store, Galeria.

Metro has consolidated all logistics processes of its sales divisions into two service centres or units - Metro Group Logistics and Metro Distribution Logistics. These two service units control the flow of goods by using standardized procurement and distribution networks. Cost reductions and service improvements, achieved by all units through this consolidation, are higher than those achieved by optimizing individual logistics structures of various sales divisions.

The service units deal with the transport of more than 50,000 pallets every day. By consolidating the transport demand of the whole group, Metro is able to utilize its transport capacities at the highest levels. It chooses the most reasonable transport means that facilitates carrying out of every transport process at the lowest possible costs with the lowest ecological impact. It avoids expensive less-than-a-truck-load deliveries replacing them with cheaper full truck load shipments. Therefore the transport costs per item are minimized.

For efficient and cost effective transportation, Metro consolidated the flow of goods in three ways: (a) direct store delivery by the manufacturer, (b) delivery to warehouse and subsequent delivery to store, and (c) delivery to the transshipment centre and forwarding to store. The consolidation of the flow of goods implied innovations in procurement and distribution. Metro started picking up deliveries directly at the manufacturer side. As in the past many suppliers often delivered single pallets to one store, therefore store managers had to deal with about 150 deliveries every day. However, consolidation of such deliveries led to a 50% reduction in daily deliveries to the ramps of stores. The delivered quantity rose to 27 pallets per delivery. Trucks were utilized nearly at full capacity, empty runs were minimized and idle times were reduced. With the break-bulk-cross-docking operation it was possible for Metro to reduce inventory dramatically.

Suppliers were asked to ship their deliveries in full truck loads, and Metro organized fine distribution at the transshipment centres. Bundling of orders allowed better purchasing prices. In Germany, Metro operates nine distribution centres for food, two for non-food and four locations for fruits and vegetables. These distribution centres are fully automated with up-to-date warehouse and transportation technology including pick-by-voice or GPS-based tracking and tracing. These distribution centres allow continuous delivery to the Metro stores. All goods, which arrive by ship in Rotterdam, are put on inland water vessels to be shipped to Duisburg Harbor. There the goods are transhipped to trains and further brought to the distribution centres in Unna and Kamen. With this strategy, CO₂ emissions and transshipment costs are reduced as well as more containers are transported in less time.

Fresh Fish Logistics of Metro/Makro Cash & Carry

When it comes to fish, Metro is the largest fish trading company of the world. Metro gets its fish from about 70 suppliers in 20 countries from Iceland to Thailand. The fish logistics is organized in the following way:

- Every morning the Metro/Makro Cash & Carry stores that have a fish department send their orders to the headquarters. Store managers can choose among 150 different types of fish and sea food. The complete assortment (sorted by origin and weight) includes more than 2,000 items.
- At the headquarters orders are consolidated and electronically forwarded to the suppliers.
- The suppliers deliver their products to the Metro transshipment platforms in Frankfurt/Main Airport and Cuxhaven by ship, airplane and truck. Fish transport being temperature sensitive, all transports need to be continuously cooled to 2 degree centigrade. The daily delivery volume is around 100 t.
- At the platforms, deliveries are fine sorted and it takes around 6 hours. Afterwards store-specific fish deliveries leave the platforms in special cooling transport units. At the ramp

of the store, quality and temperature are (again) controlled and the fish is brought to the sales floor.

Metro/Makro Cash & Carry in India

Metro/Makro Cash & Carry is the leading self-service wholesale chain having a global network of more than 600 stores in 30 countries. In India, Metro Cash & Carry operates at six locations. In line with its one-stop shopping principle, Metro Cash & Carry offers customers in one store a complete assortment of products and services-50,000 products (20,000 food items and 30,000 non-food items). Instead of offering a standardized range of products, Metro Cash & Carry adapts the assortment to the local market needs. This means that the share of regional products is very high in the assortment. In fact, it sources more than 90% of the goods from local producers and suppliers.

As for India, Metro/Makro Cash & Carry has the Agricultural Produce Marketing Committee (APMC) license which enables it buy products from local farmers at reasonable prices. Like any other Western company active in India, Metro/Makro Cash & Carry has to cope with a supply chain infrastructure that is not of the standard as in their native countries. In India, supply chains are very long and very fragmented. Even though the highway network is very good, street connections to the hinterland of large cities are poor. This means cold chains are often interrupted and permanent temperature levels cannot be kept. About 25% of all incoming goods are either deteriorated or lost.

To save its fresh product supply chain from these problems, Metro/Makro Cash & Carry has set up slaughterhouses, fish handling centres and a cold chain of refrigerated trucks. These investments were necessary as most of Indian transport capacities are over-aged and maintained poorly. Another problem in setting up a transport system covering the entire country (= all India road permit) is the huge number of legal and fiscal regulations. For example, there is no unified value added tax (VAT) system, which increases the level of total logistics costs. In order to keep costs at a reasonable level, the organization should have intensive exchange of information and good relationships with all supply chain actors.

For this reason, Metro/Makro Cash & Carry established a supplier relationship management portal in order to improve transparency and reduce transaction costs for the suppliers. Furthermore farmers receive education in terms of quality management so that hygiene and product shelf life are increased and waste is reduced.

In May 2008, Metro/Makro Cash & Carry opened its store at Neptune's Magnet Mall in Bhandup, Mumbai. The store concept for this location differs from a typical store outlet as for the first time a multi-level store has been opened. One challenge the company faces while moving goods to this store is the octroi levy, a special tax on consumer goods transport to the city centre. At connections from the highway to the city centre, toll centres are located in to collect octroi. This leads to heavy congestions that increase transport times dramatically.

Questions

1. **Rate the strategies followed by Metro to control transportation costs? Explain the business process relevant to fresh fish logistics operations of Metro?**
2. **What are the possible KPIs for measuring the performance of Metro's supply chain and Logistics operations?**
3. **Discuss Metro Cash & Carry model in India? Develop strategic guidelines for the India office considering the problems they faced at their international operations?**