

January – February 2022
Master of Business Administration (MBA) Examination

(Full Time) (New) Third Semester
FT-301C : SUPPLY CHAIN MANAGEMENT

Time 3 Hours]

[Max. Marks 80

Note : Attempt any four questions from Section A. Each question carries 15 marks. Section B is compulsory and carries 20 marks.

Section A

1. What do you understand by Supply Chain Management ? How it differs from Logistic ? Explain the concept of Logistic Mix.
2. What is Network Design in Supply Chain ? Explain various factors affecting the network design considerations.
3. Discuss the role of IT in Supply Chain Management and Decisions. How it is influencing the supply chain performance ?
4. What is Bullwhip Effect ? Describe various causes and their remedial measures.
5. Write short notes on any two of the following :
 - (a) Supplies Evolution and Selection
 - (b) Strategic Supply Chain Management
 - (c) Inventory Models.

Section B

6. Analyze the case and answer the questions given at end :

DETERGENTS INDIA LIMITED (DIL)

Mr Lakshman, the General Manager (Logistics) of Detergents India Limited (DIL) was examining the weekly despatch plan of the northern region. The northern region consisted of five plants manufacturing detergents. These plants supplied to 10 branch warehouses from where further distribution took place to warehouses/retail stockists. The despatch plan for week 23 during 1991 is given in Exhibit 1. A total of 440 tonnes were to be moved in 44 truckloads. Exhibit 2 gives the road transportation cost matrix, which was in effect in 1991.

DIL was a large detergent manufacturing company with 25 plants located all over India, producing a total of 1,50,000 tonnes per annum. The annual turnover of the company was nearly Rs 350 crore. The company distributed detergents to wholesalers and retail stockists through its 10 branch warehouses. DIL organised the distribution independently in its five regions (central, eastern, northern, southern and western). Even within a region, depending upon plant capacity which varied quite a bit from plant to plant, and warehouse demand (which also varied depending upon the market served), implicit linkages were established between the plant and the warehouse. These linkages were usually reviewed once in six months and revised depending upon transportation problems, major shifts in market demand or plant capacity. The linkage plan generally tried to ensure that each plant would be responsible for between two and five warehouses, and each warehouse must be in a position to be served by at least two of the plants. Under these broad guidelines, a weekly despatch plan was arrived at by the distribution manager of each region. Depending on actual requirements and supply for each week, some of the plants serviced fewer warehouses than their potential.

P. T. O.

While studying the despatch plan, the GM (Logistics) felt that the plan, being subject to the rigidities of the linkage plans, could be sub-optimal, both in terms of costs and possible stock outs. He felt that the weekly despatch plan should be determined without any linkage constraints, and if need be, despatches could even be made across regions depending upon the proximity of the plant and the warehouse. In effect, he felt that centralising the despatch plan could bring a lot of savings to the company.

He tried to visualise what would be the problems and requirements of developing such a system. The forecasted warehouse requirements and supply availability would need to be obtained from each of the warehouses and plants respectively, on a weekly basis, and in time for the centralised decision-making. Perhaps information technology could help here. An OR-based model would then work out an optimal despatch plan, based on which a despatch advice could be communicated to all the plants. He did foresee some resistance, however, from factory managers who currently held overall responsibility for making available the requirements of the warehouses to which they were linked, of course with some coordination by the regional distribution manager.

Mr Lakshman was wondering what he should do next.

Questions for Discussion :

1. What is an appropriate framework for modelling the decision that the centralised planner would face ?
2. If the service conditions of having multiple sourcing for each of the major demand points were to be met, how would this be handled in a central planning system ?
3. How does this Logistical Model of capacity allocation contribute to an accurate decision regarding capacity expansion ?
4. What type of contracts would be required in the two cases ? What are the likely economics of transporters in these cases and how can DIL influence their response ?
5. What are the implications for factory managers who would have to move to a system of responding to a dispatch advice rather than be the resource allocators under a given framework of linkages ?

EXHIBIT 1
Despatch Plan

Plant		Warehouse Location										(Tonnes)
		1	2	3	4	5	6	7	8	9	10	Total
Location												Despatch
A		80										80
B		20	100	20								140
C				80	10	10	30	10				140
D									40	10	20	70
E											10	10
Total												
Requirement		100	100	100	10	10	30	10	40	10	30	440

EXHIBIT 2

Road Transportation Cost (Rs/tonr)

Plant Location	1	2	3	4	5	6	7	8	9	10
A	50.1	141.9	109.5	105.3	70.8	275.0	61.5	118.5	136.5	132.3
B	66.6	121.5	93.6	90.6	56.7	187.5	73.2	115.8	149.4	122.4
C	79.8	112.8	85.5	81.0	46.2	162.5	65.1	102.6	147.9	112.8
D	82.5	86.7	82.5	78.3	42.6	175.0	60.9	82.5	126.9	105.6
E	165.9	120.0	51.0	96.9	96.9	50.0	82.2	96.6	145.8	181.5

Total Road Transportation Cost (Rs)

Plant Location	1	2	3	4	5	6	7	8	9	10	Total
A	4,008	0	0	0	0	0	0	0	0	0	4,008
B	1,332	12,150	1,872	0	0	0	0	0	0	0	15,354
C	0	0	6,840	810	462	4,875	651	0	0	0	13,638
D	0	0	0	0	0	0	0	3,300	1,269	2,112	6,681
E	0	0	0	0	0	0	0	0	0	1,815	1,815
Total Cost	5,340	12,150	8,712	810	462	4,875	651	3,300	1,269	3,927	41,496

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