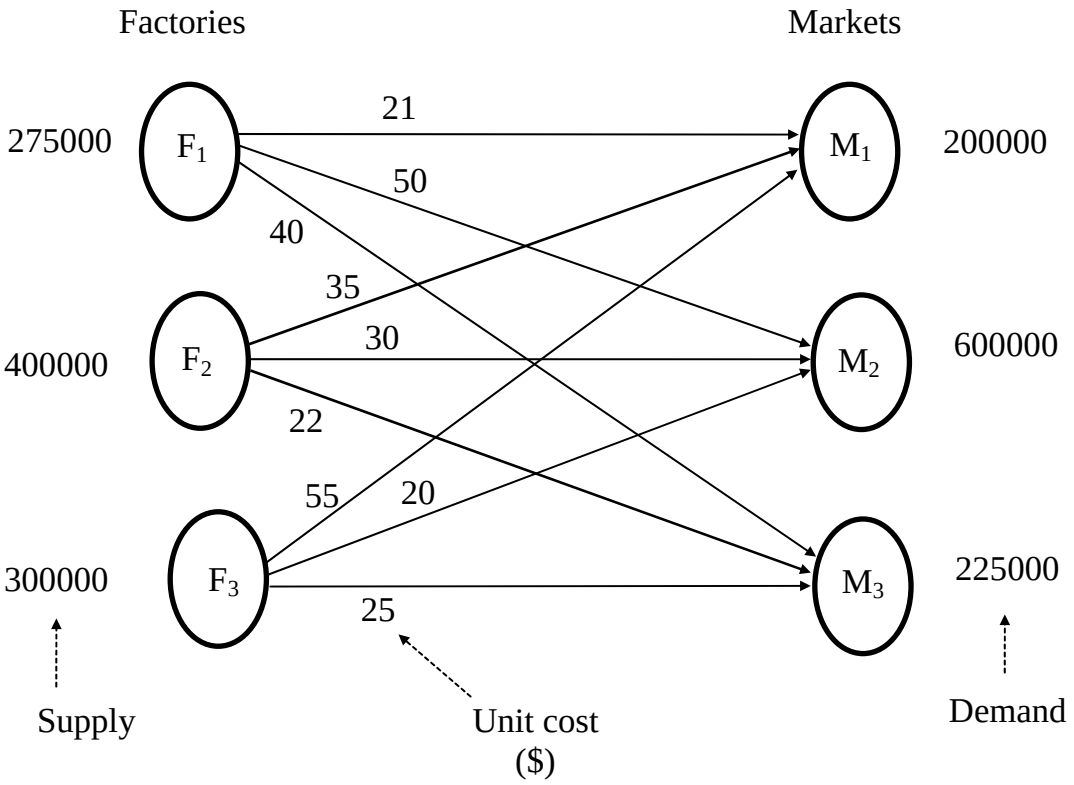
BAR-ILAN UNIVERSITY

TOPICS IN SUPPLY CHAIN MANAGEMENT
SESSION 4

THE DESIGN OF A NETWORK IN A SUPPLY CHAIN: APPLICATIONS

Problem 1:

Tropicsun company must determine an optimal transportation network to supply its 3 markets from its 3 factories. The graph associated with Tropicsun's problem is shown below.



Determine the optimal transportation network.

Problem 2:

The distribution network of Herman company is composed of 3 factories, 2 warehouses and 4 markets. The production capacity (in tons) of each factory, and the unit cost (in $) related to the transportation from each factory to each warehouse are reported below.

	Warehouses		Production
Factories	W_1	W_2	capacity
F_1	4	7	450
F_2	8	5	600
F_3	5	6	380

On the other hand, the demand of each market (in tons) and the unit transportation cost (in $) from each warehouse to each market are given below.

	Markets			
Warehouses	M_1	M_2	M_3	M_4
W_1	6	4	8	4
W_2	3	6	7	7
Demand	300	300	300	400

Determine the optimal trans-shipment network of the Herman company.

Problem 3:

TelecomOptic, a company of the telecommunications sector, has recently merged. It should decide of a new structure for its production activities. The informations about the demand, as well as the production costs and capacities are reported below.

	Production and transportation cost per k units (k $)						Production capacity/month (k units) K_i	Fixed Cost/month (k$) f_i
Markets Factories	Atlanta	Boston	Chicago	Denver	Omaha	Portland		
Baltimore	1 675	400	685	1 630	1 160	2 800	18	7 650
Cheyenne	1 460	1 940	970	100	495	1 200	24	3 500
Salt Lake City	1 925	2 400	1 425	500	950	800	27	5 000
Memphis	380	1 355	543	1 045	665	2 321	22	4 100
Wichita	922	1 646	700	508	311	1 797	31	2 200
Sales/month (k units) D_j	10	8	12	6	7	11		

Should TelecomOptic reorganize its production activities?