

TP - Initial solution

Methods to determine Initial Basic Feasible Solution (IBFS)

- ▶ North West corner rule (NWC)
- ▶ Row minima method
- ▶ Column minima method
- ▶ Matrix minima method (Least Cost Method - LCM)
- ▶ **Vogel's approximation method (VAM)**

NORTH - WEST CORNER RULE

- Step1: Identify the cell at North-West corner of the transportation matrix.
- Step2: Allocate as many units as possible to that cell without exceeding supply or demand; then cross out the row or column that is exhausted by this assignment
- Step3: Reduce the amount of corresponding supply or demand which is more by allocated amount.
- Step4: Again identify the North-West corner cell of reduced transportation matrix.
- Step5: Repeat Step2 and Step3 until all the rim requirements are satisfied.

North West corner rule

		Warehouses				
		W1	W2	W3	W4	Capacity
Factory	F1	19	30	50	10	7
	F2	70	30	40	60	9
	F3	40	8	70	20	18
Requirement		5	8	7	14	

		Warehouses				Capacity
		W1	W2	W3	W4	
Factory	F1	5	2			7
	F2	19	30	50	10	9
	F3	70	30	40	60	18
Requirement		40	8	70	14	20
		5	8	7	14	

Calculate Total Cost (TC)

$$19*5 + 30*2 + 30*6 + 40*3 + 70*4 + 20*14 = 1015$$

Row Minima Method

- Row minima method consists in allocation as much as possible in the lowest cost cell of the first row so that either the capacity of the first plant is exhausted or the requirement at distribution centre is satisfied or both.

ROW MINIMA METHOD

		Distribution Center				Supply
		1	2	3	4	
Plant	1	2 (6)	3	11	7	6
	2	1	0 (1)	6	1	1
	3	5 (1)	8 (4)	15 (3)	9 (2)	10
Requirement		7	5	3	2	17

Calculate Total Cost (TC)

$$2*6 + 0*1 + 5*1 + 8*4 + 15*3 + 9*2 = 112$$

Column Minima Method

- Column Minima Method consist in allocating as much as possible in the lowest cost cell of the first column so that either the demand of the first distribution centre is satisfied or the capacity of the plant is exhausted or both.

Column Minima

Requirement

Solⁿ: Init

Method

10	13	6(10)	10 0
16	7(11)	13(1)	12 1 0
8(6)	22	2(2)	8 2 0

Requirement

~~8~~
0

~~11~~
0

~~13~~
~~11~~

Calculate Total Cost (TC)

$$8*6 + 7*11 + 6*10 + 13*1 + 2*2 = 202$$

Least Cost Method or Matrix Minima Method

Step 1. select the cell with the lowest transportation cost among all the rows or columns of the transportation table. If the minimum cost is not unique then select arbitrarily any cell with the lowest cost.

Step 2. Allocate as many units as possible to the cell determined in step 1 and eliminate that row in which either capacity or requirement is exhausted.

Least Cost Method or Matrix Minima Method

Source \ To	D	E	F	Supply
A	5	8 50	4	50
B	6	6 5	3 35	40
C	3 20	9 40	6	60
Demand	20	95	35	150

Calculate Total Cost (TC)

$$3*20 + 8*50 + 6*5 + 9*40 + 3*35 = 955$$