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Ramifications of Advanced Method

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Abstract:
This paper discusses about ramifications of Advanced method as propounded by Reena G Patel and P.H.Bathwala[1].In most of the transportation problems transportation costs given by Advanced method is much higher than transportation costs as given by MODI method.In maximum number of cases transportation cost given by VAM is less than that given by Advanced method..Two illustrations are given in this paper to prove this assertion.

Keywords:
Transportation problem, optimal solution, VAM, Advanced method, MODI method

INTRODUCTION

As by Hamdy.A.Taha[4],Transportation problem is a special type of linear programming problem, where the objective is to minimize the cost of distributing a commodity from fixed number of sources to a fixed number of destinations.Let there are m sources $S_1, S_2, \_ \_ \_ \_ \_ \_, S_m$ and n destinations $D_1, D_2, D_3 \_ \_ \_ \_ \_, D_n$.

Transportation problem can be represented as LPP as follows

Minimize : $Z = \sum_{i=1}^{m} \sum_{j=1}^{n} cij\ xij$

Subject to

$\sum_{j=1}^{n} xij \leq ai$, i=1,2,3....m

$\sum_{i=1}^{m} xij \geq bj$, j=1,2,3.....n

$X_{ij} \geq 0$ for all i,j

ai = quantity of commodity available at origin i
bj = quantity of commodity needed at destination j
cij =cost of transportation of one unit of commodity from ith source to jth destination .
xij = number of units of commodity to be transported from ith source to jth destination

2. NUMERICAL EXAMPLES:-

Example 1. Transportation model of problem is given below

	Destinations			
Sources	X	Y	Z	Supply
A	1	2	3	50
B	3	2	1	80
C	4	5	6	75
D	3	1	2	95
Req.	120	80	100	300

Solution of the problem by Advanced method is represented in the following table

Sources	X	Y	Z	Supply
A	$1_{(50)}$	2	3	50
B	3	$2_{(55)}$	$1_{(25)}$	80
C	4	5	$6_{(75)}$	75
D	$3_{(70)}$	$1_{(25)}$	2	95

Requirement 120 80 100

Total transportation cost

=50×1+55×2+25×1+75×6+70×3+25

=870

Solution of transportation problem by VAM is represented in the following table

Sources	X	Y	Z	Supply
A	$1_{(50)}$	2	3	50
B	3	2	$1_{(80)}$	80
C	$4_{(70)}$	5	$6_{(5)}$	75
D	3	$1_{(80)}$	$2_{(15)}$	95
Requirement	120	80	100	

Total transportation cost

=50×1+80×1+70×4+5×6+80×1+15×2

=Rs.550

Solution of problem by MODI method is represented in the following table

Destinations

Sources	X	Y	Z	Supply
A	$1_{(50)}$	2	3	50
B	3	2	$1_{(80)}$	80
C	$4_{(70)}$	5	$6_{(5)}$	75
D	3	$1_{(80)}$	$2_{(15)}$	95
Requirement	120	80	100	

Total transportation cost

=50×1+80×1+70×4+5×6+80×1+15×2

=Rs.550

Example 2: Transportation model of a problem is given below

Destinations

Source	D1	D2	D3	D4	Supply
S1	2	3	11	7	6
S2	1	0	6	1	1
S3	5	8	15	9	10
Req.	7	5	3	2	17

Solution of the problem by Advanced method is represented in the following table

Source	D1	D2	D3	D4	Supply
S1	$2_{(1)}$	3	$11_{(3)}$	$7_{(2)}$	6
S2	$1_{(1)}$	0	6	1	1
S3	$5_{(5)}$	$8_{(5)}$	15	9	10
Req.	7	5	3	2	17

Total transportations cost
=2×1+11×3+7×2+1×1+5×5+8×5
=Rs.115

Solution of the problem by VAM is reprensented in the following table

Source	D1	D2	D3	D4	Supply
S1	$2_{(1)}$	$3_{(5)}$	11	7	6
S2	1	0	6	$1_{(1)}$	1
S3	$5_{(6)}$	8	$15_{(3)}$	$9_{(1)}$	10
Req.	7	5	3	2	17

Total transportation cost=2×1+3×5+1×1+5×6+15×3+9×1

=Rs 102

Solution of the problem by MODI method is reprensented in the following table

Source	D1	D2	D3	D4	Supply
S1	2	$3_{(5)}$	$11_{(1)}$	7	6
S2	1	0	$6_{(1)}$	1	1
S3	$5_{(7)}$	8	$15_{(1)}$	$9_{(2)}$	10
Req.	7	5	3	2	17

Total transportation cost=3×5+11×1+6×1+5×7+15×1+9×2

=Rs 100

Result analysis Above illustrations falsifies the claim of Reena.G.Patel and P.H.Bhathwala. The comparison table of the solutions given by Advanced,VAM and MODI methods is given below.

Methods	**Total transportation cost(in Rs)**	
	Example1	**Example2**
Advanced	870	115
VAM	550	102
MODI	550	100

4. Conclusion

Above illustrations prove that there is no comparison between transportation costs in transportation problems as worked out by Advanced method and MODI method.

References

[1] Patel.Reena.G,Bhathwala.P.H , Advanced Method for the Optimum solution of a transportation problem, International Journal of Science and Research,2319-7064,2015

[2] Dantzig G.B ,Linear programming and extentions. Princeton university press,Princeton,NJ,1963.New Delhi,2007.

[3] Hadley.G,Linear Programming,Narosa Publishing House,6th edition,2006.

[4]. Hamdy A.T. , operations Research: An introduction, 8th edition, Pearson Prentice Hall,New Delhi,2007