

Implications Of SS Method

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ABSTRACT:

This paper discusses the implications of SS method for finding the optimal solution of transportation problem. SS method^[2] does not give optimal solution in all transportation problems as claimed by A.seethalakshmy and Dr.N.Srinivasan (2016)^[1]. In some of the transportation problems difference between the transportation costs as worked out by SS method and MODI method is very high. One counter example is given in this paper to prove this assertion.

Keywords: Transportation problem , Supply, Requirement, optimal solution ,SS method

1.INTRODUCTION

As by Hamdy.A.Taha^[3],Transportation problems are one of the types of LPP where the objective is to transport various quantities of a single homogeneous commodity from fixed number of sources to a fixed number of destinations in such a way that the total transportation cost is minimum.Let there are m sources S_1, S_2, \dots, S_m . and n destinations $D_1, D_2, D_3, \dots, D_n$.

Transportation problem can be represented mathematically as LPP as follows

$$\text{Minimize : } Z = \sum_{i=1}^m \sum_{j=1}^n c_{ij} x_{ij}$$

Subject to

$$\sum_{j=1}^n x_{ij} \leq a_i, \quad i=1,2,3,\dots,m$$

$$\sum_{i=1}^m x_{ij} \geq b_j, \quad j=1,2,3,\dots,n$$

$$x_{ij} \geq 0 \quad \text{for all } i,j$$

a_i = quantity of commodity available at origin i

b_j = requirement of commodity at destination j

c_{ij} =cost of transportation of one unit of commodity from i th source to j th destination .

x_{ij} = number of units of commodity to be transported from i th source to j th destination

2. NUMERICAL EXAMPLE-

Example . Transportation model of problem is given below

Destinations

Sources	D ₁	D ₂	D ₃	D ₄	D ₅	Supply
S ₁	9	9	10	5	4	850
S ₂	6	9	6	12	7	550
S ₃	9	10	8	4	4	950
Req.	430	380	330	280	930	2350

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

Destinations

Sources	D ₁	D ₂	D ₃	D ₄	D ₅	Supply
S ₁	9	9	10	5	4 ₍₈₅₀₎	850
S ₂	6 ₍₄₃₀₎	9	6 ₍₁₂₀₎	12	7	550
S ₃	9	10 ₍₃₈₀₎	8 ₍₂₁₀₎	4 ₍₂₈₀₎	4 ₍₈₀₎	950
Req.	430	380	330	280	930	2350

Total transportation cost

$$=850 \times 4 + 430 \times 6 + 120 \times 6 + 380 \times 10 + 210 \times 8 + 280 \times 4 + 80 \times 4$$

$$=Rs.13620$$

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

Destinations

Sources	D ₁	D ₂	D ₃	D ₄	D ₅	Supply
S ₁	9	9 ₍₃₈₀₎	10	5	4 ₍₄₇₀₎	850
S ₂	6 ₍₄₃₀₎	9	6 ₍₁₂₀₎	12	7	550
S ₃	9	10	8 ₍₂₁₀₎	4 ₍₂₈₀₎	4 ₍₄₆₀₎	950
Req.	430	380	330	280	930	2350

Total transportation cost

$$=380 \times 9 + 470 \times 4 + 430 \times 6 + 120 \times 6 + 210 \times 8 + 280 \times 4 + 460 \times 4$$

$$=Rs.13240$$



3. Result analysis Above example proves that contention of *A.Seethalakshmi. and Dr.N.Srinivasan* is not correct. The comparison table of the solutions given by SS method and MODI methods is given below.

Methods	Total transportation cost (in Rupees)
SS	13620
MODI	13240

4. Conclusion

Above noted study proves that SS Method and MODI method are not comparable for finding optimal solution of a transportation problem.

References

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