IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

ASSIGNMENT PROBLEM

RAVIRAJSINH M SARVAIYA

RESEARCH SCHOLAR , DEPT. OF STATISTICS,

SAURASHTRA UNIVERSITY,RAJKOT

ABSTRACT

The current paper deads with the solution to find the number of facilities or resources or persons for jobs or Activites . the problem is solved by using assignment problem.at also includes some fundamentals of this problem and to solve it by Hungarian method

INTRODUCTION

Assignment problem is a special type of linear programming in which the objective is to find the optimum allocation of a number of tasks to an equal number of facilities .here we make the assumption that each person can perform each job but with varying degree of efficiency .for example a departmental head may have four persons available for assignment and four jobs to fill then his interests is to find the best assignment which will be in the best interest of the demand

KEY WORDS

Assignment problem ,Hungarian method, optimum allocation

General Mathematical form of assignment problem:-

The assignment problem can be stated in the form of n x n matrix $[c_{ij}]$ callrd cost or effectiveness matrix, where C_{ij} is the cost of assigning in facility to the jth job

Resources (worker)	Activities(jobs)					
	J_1	J_2	J_3---------- J_J - ----------		J_n	supply
W_1	C_{11}	C_{12}	C_{13}----------C_{ij}_____		C_{1n}	1
W_2	C_{21}	C_{22}	C_{23}----------C_{2j}----------		C_{2n}	1
W_3	C_{31}	C_{32}	C_{33}----------C_{3j}----------		C_{3n}	1
:	:	:	:	:	:	:
W_i	C_{i1}	C_{i2}	C_{i3}----------C_{ij}----------		C_{in}	1
:	:	:	:	:	:	:
W_n	C_{n1}	C_{n2}	C_{n3} ----------C_{nj}----------		C_{nn}	1
DEMAND	1	1	1	1	1	

Mathematically :- an assignment problem can be stated as follows:-

Minimize the total cost

$\sum_{i=1}^{n}\sum_{j=1}^{n} C_{ij}X_{ij}$

Where x_{ij} =1{if i^{th} person is assigned to the j^{th} job}

=0{if i^{th} person is not assigned to the j^{th} job}

Subject to the condition

(i)$\sum_{i=1}^{n} x_{ij}$ =1 j= 1,2,3…….,n

Which means that only one job is done by the i^{th} person,i= 1,2,3,….n

(ii)$\sum_{i=1}^{n} x_{ij}$ =1 i=1,2,3,……..n

Which means that only one person should be assigned to the j^{th} job .

j =1,2,3,……n

CONCLUSION

Assignment problems can be solved using Hungarian method to find the optimum solution

REFERENCES

1) J.Munkres,"Algorithms for the Assignment and transportation problems",
2) Harold W.Kuhn ,"various of the Hungarian method for assignment problems"