**Table 5:** Table Representation of the Proposed Algorithm for Example 4.

| N | Edge | cost | Kruskalstep1 Cost = 0*10 = 0 | | Kruskal step2 Cost=0+1*20 = 20 | | Kruskal step3 Cost = 20+2*8 =36 | | Kruskal step4 Cost = 36+2*42 =120 | | Kruskal step5 Cost = 120+3*5 =135 | | Kruskal step 6 Cost = 135+5*8 =175 | | Kruskal step 7 Cost = 175+16*17 =447 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $S_1D_5$ | 0 | X | | X | | X | | X | | X | | X | | X | |
| 2 | $S_2D_5$ | 0 | X | | X | | X | | X | | X | | X | | X | |
| 3 | $S_3D_5$ | 0 | X | | X | | X | | X | | X | | X | | X | |
| 4 | $S_2D_1$ | 1 | $S_2D_1$ | 1 | X | | X | | X | | X | | X | | X | |
| 5 | $S_1D_4$ | 2 | $S_1D_4$ | 2 | $S_1D_4$ | 2 | X | | X | | X | | X | | X | |
| 6 | $S_3D_3$ | 2 | $S_3D_3$ | 2 | $S_3D_3$ | 2 | $S_3D_3$ | 2 | X | | X | | X | | X | |
| 7 | $S_1D_1$ | 3 | $S_1D_1$ | 3 | $S_1D_1$ | 3 | $S_1D_1$ | 3 | $S_1D_1$ | 3 | X | | X | | X | |
| 8 | $S_2D_3$ | 3 | $S_2D_3$ | 3 | X | | X | | X | | X | | X | | X | |
| 9 | $S_3D_1$ | 4 | $S_3D_1$ | 4 | $S_3D_1$ | 4 | $S_3D_1$ | 4 | $S_3D_1$ | 4 | X | | X | | X | |
| 10 | $S_3D_2$ | 5 | $S_3D_2$ | 5 | $S_3D_2$ | 5 | $S_3D_2$ | 5 | $S_3D_2$ | 5 | $S_3D_2$ | 5 | X | | X | |
| 11 | $S_3D_4$ | 5 | $S_3D_4$ | 5 | $S_3D_4$ | 5 | X | | X | | X | | X | | X | |
| 12 | $S_2D_4$ | 8 | $S_2D_4$ | 8 | X | | X | | X | | X | | X | | X | |
| 13 | $S_1D_3$ | 9 | $S_1D_3$ | 9 | $S_1D_3$ | 9 | $S_1D_3$ | 9 | X | | X | | X | | X | |
| 14 | $S_2D_2$ | 9 | $S_2D_2$ | 9 | X | | X | | X | | X | | X | | X | |
| 15 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | $S_1D_2$ | 16 | X | |

## 4. Conclusion

The proposed algorithm for finding the minimum feasible solution for the transportation problem is based mainly on using Kruskal's algorithm for finding out the MST with some modification. Four different examples representing different transportation problem cases were taken into account to study the correctness and expandability of the proposed algorithm. From the results given in figures 2-5 and tables 2-5,it is clear that the proposed algorithm can be used in different transportation models and gives faster convergence criteria since it is based mainly on the reduction of the number of vertices and edges after each iteration since the time complexity of such algorithms is highly related to E(number of edges) and V (number of vertices)

## 5. References

[1] Hamdy A. Taha, Operations Research: An Introduction ,9th Edition,2013, ISBN-13: 978 0132555937.

[2] Douglas B. West, Introduction to Graph Theory, 2nd Edition, PHI NewDElhi,2009.

[3] S.Kumaraguru, B. Satheesh Kumar, M. Revathy, Comparitive Study of Various Methods for Solving Transportation Problem, IJSR –I INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH Volume : 3, Issue : 9 September 2014, ISSN No 2277 – 8179.

[4] Ilija NIKOLIĆ, TOTAL TIME MINIMIZING TRANSPORTATION PROBLEM, Yugoslav Journal of Operations Research,17 (2007), Number 1, 125-133, DOI: 10.2298/YUJOR0701125N.

[5] Zrinka L. , Dubravko H., Luka N., SOLVING THE PRODUCTION-TRANSPORTATION PROBLEM IN THE PETROLEUM INDUSTRY, REVISTA INVESTIGACIÓN OPERACIONAL Vol., 29 No 1, 63-70 , 2008.

[6] Mohammad Kamrul Hasan, Direct Methods for Finding Optimal Solution of a Transportation Problem are not Always Reliable. International Refereed Journal of Engineering and Science (IRJES) ISSN (Online) 2319-183X, (Print) 2319-1821 Volume 1, Issue 2 (October 2012), PP.46-52.

[7] Nabendu S., Tanmoy S. , Banashri S., A study of Transportation Problem for an Essential Item of Southern Part of North Eastern Region of India as an OR Model and Use of Object Oriented Programming, IJCSNS International Journal of Computer Science and Network Security, VOL.10 No.4, April 2010.

[8] Gaurav Sharma, S. H. Abbas, Vijay Kumar Gupt, SOLVING TRANSPORTATION PROBLEM WITH THE VARIOUS METHOD OF LINEAR PROGRAMMING PROBLEM, Asian Journal of Current Engineering and Maths1: 3 May – June (2012) 81 – 83.

[9] M. A. Hakim, An Alternative Method to Find Initial Basic Feasible Solution of a Transportation Problem, Annals of Pure and Applied Mathematics, Vol. 1, No. 2, 2012, 203-209, ISSN: 2279-087X (P), 2279-0888(online), Published on 16 November 2012.

[10] Hlayel Abdallah Ahmad, The Best Candidates Method for Solving Optimization Problems, Journal of Computer Science 8 (5): 711-715, 2012,ISSN 1549-3636© 2012 Science Publications.

[11] Abdallah A. Hlayel, Mohammad A. Alia, SOLVING TRANSPORTATION PROBLEMSUSING THE BEST CANDIDATES METHOD, Computer Science & Engineering: An International Journal (CSEIJ), Vol.2, No.5, October 2012, DOI :10.5121/cseij.2012.2503 23.

[12] Abdul Sattar S., Gurudeo A. T., Ghulam M., A comparative study of initial basic feasible solution methods for transportation problems, Mathematical Theory and Modeling ISSN 2224-5804 (Paper) ISSN 2225-0522 (Online) Vol.4, No.1, 2014.