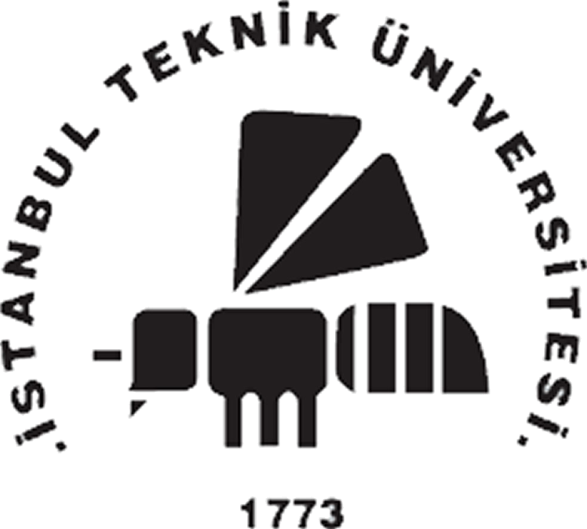
**Istanbul Technical University**

**Faculty of Computer and Informatics**



**BLG368E Operations Research**

**Homework 5: Transportation Model Methods**

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1. The north-west corner method generates an initial allocation according to the

following procedure:

1. Allocate the maximum amount allowable by the supply and demand constraints to

the variable x11 (i.e. the cell in the top left corner of the transportation tableau).

2. If a column (or row) is satisfied, cross it out. The remaining decision variables in

that column (or row) are non-basic and are set equal to zero. If a row and column

are satisfied simultaneously, cross only one out (it does not matter which).

3. Adjust supply and demand for the non-crossed out rows and columns.

4. Allocate the maximum feasible amount to the first available non-crossed out element in the next column (or row).

5. When exactly one row or column is left, all the remaining variables are basic and

are assigned the only feasible allocation.

1. Minimum cost method usually provides a better initial basic feasible solution than the North-West Corner method since it takes into account the cost variables in the problem.

1. Assign as much as possible to the cell with the smallest unit cost in the entire

tableau. If there is a tie then choose arbitrarily.

2. Cross out the row or column which has satisfied supply or demand. If a row and

column are both satisfied then cross out only one of them.

3. Adjust the supply and demand for those rows and columns which are not crossed

out.

4. When exactly one row or column is left, all the remaining variables are basic and

are assigned the only feasible allocation.

1. Vogel’s method also takes costs into account in allocation. It usually produces an optimal or near- optimal starting solution. One study found that VAM yields an optimum solution in 80 percent of the sample problems tested. Five steps are involved in applying this heuristic:

1. Determine the difference between the lowest two cells in all rows and columns, including dummies.

2. Identify the row or column with the largest difference. Ties may be broken arbitrarily.

3. Allocate as much as possible to the lowest-cost cell in the row or column with the highest difference. If two or more differences are equal, allocate as much as possible to the lowest-cost cell in these rows or columns.

4. Stop the process if all row and column requirements are met. If not, go to the next step.

5. Recalculate the differences between the two lowest cells remaining in all rows and columns. Any row and column with zero supply or demand should not be used in calculating further differences. Then go to Step 2.