**Network Model**

Although network models may be classified in several ways, our method for using them all is the same: we utilize a diagram to assist us design and resolve linear programming issues. The network model illustrates the patterns of movement inside a networked system, where the movement may be of resources, people, or money. The components of the system may be physical places, like cities, storage facilities, or production lines, or they could be temporal points rather than physical ones. The constituents are represented as nodes, or circles, in the diagrams we create to illustrate such systems.

We learned about four different types of Network Models from the lecture. They are,

1. Shortest Path
2. Minimum Spanning Tree
3. Maximum Flow
4. Minimum Cost Flow.

**Which Model Can be used for Transportation Problem?**

For our transportation model problem, our objective is to minimize total cost of transportation from supply to demand. For this purpose, the best network model that can be used is **minimum cost flow network model**.

In a minimum cost flow model, at least one of the nodes is supply node and one of the other nodes is a demand node. Like shortest path, in this model it considers cost to flow through an arc from one to another node. We can efficiently solve this model by formulating it as a linear programming equation and solve it through a Simplex Method.

When it comes to our transportation problem, we have supply nodes which are Plant A & B and demand nodes which are warehouses 1,2 &3 and the transportation costs are the connected arcs. Our objective is to minimize the total cost send available supply from plants through the given network to meet the demand at the warehouses.

Based on the above information we can do LP formulation and solve the equation using simplex method. Thus we can find the minimize the transportation cost using minimum cost flow network model.

References:

[https://www.oreilly.com/library/view/management-science-the/9781118582695/17\_chapter10.html#:~:text=Network%20models%20themselves%20fall%20into,material%2C%20people%2C%20or%20funds Links to an external site.](https://www.oreilly.com/library/view/management-science-the/9781118582695/17_chapter10.html#:~:text=Network%20models%20themselves%20fall%20into,material%2C%20people%2C%20or%20funds).

<https://en.wikipedia.org/wiki/Minimum-cost_flow_problem>