**Literature Review:**

1. Wuttinan Nunkaew and Busaba Phruksapjanrat, in their study, they studied the multi objective programming for transportation problem with the consideration of depot to customer and customer to customer relationship. He solved multi objective transportation problem with a minimization of the total transportation cost & overall independence value. In his proposed model, the efficient reasonable solution can be obtained which satisfied both the considerations of depot to customer and customer to customer relationship, that mean the lowest total transportation cost and the nearest vicinity of customer are determine.

2. Sobhan Babu K., Sundara Murthy M., they presented lexi-search algorithm incorporating pattern recognition techniques. They found even with the restriction imposed, the lexi-search algorithm takes reasonably less time and while arranging the alphabet table with the modification of the sort procedure, the Lexi-search algorithm becomes more efficient.

3. Alireza Ghahari and Mohsen Mosleh, they studied the application of three different mixed Integer Programming (MIP) models for the pricewise linear cost function formulation in Productive-transportation problem (PTP) and compared the efficiencies of their solution. They recommend constructing a globally dispersed multistage supply chain network with in-house production plants and outsourcing facilities.

4. Aslan Deniz Karaoglen, Demet Gonen, Emineucmus, in their study, they have studied a case about the scheduling problem in transportation in an airline company. Their purpose of study is to describe, analyse and evaluate about how aircraft scheduling was managed in an aircraft company. They provided to aircraft company an efficient mathematical modelling technique for it’s scheduling facilities.
5. Cristhian R. Quezada, T. Prabhakar Clement, Kang-Kun Lee, in their study, they presented a general method for solving multi-dimensional multi-species, reactive transport equations coupled with a first order kinetic reaction network. They solved uncoupled equations using an elementary solution. The details of the proposed method are illustrated by deriving an explicit analytical solution to a two-species transport problem. Their study results proved that the proposed solution scheme is a robust procedure for solving different types of multi-dimensional multi-species problem that are coupled with various types of first order kinetic reactions.

6. Lohgaonkar M.H, Bajaj V.H, Jadhav V.A and Patwani M.B, in their study, they developed multi objective and multi index fuzzy programming model which not only satisfies more of the actual requirements of the integral system but is also more flexible than conventional transportation problem. They used fuzzy programming technique (Linear, Hyperbolic and Exponential membership function) for sending multi objective, Multi index transportation problem.

7. Pawan Tamta, Bhagwati Pande, H.S. Dhami, in their study, they attempted to develop a simple logical technique for the development of a user friendly general algorithm, which is not based on linear programming model and has the advantage of solving all types of transportation problem in only two steps.

8. Purusotham, S and Sundara Murthy M, in their study, they dealt with the special case of the transportation problem, where the cost of transportation of the goods from the warehouse is a bulk cost. They developed a pattern recognition technique based Lexi Search Algorithm to minimize the total cost of the bulk transportation. The concepts and the algorithm are also discussed with a suitable numerical example. They found that Lexi Search Algorithm is faster than the Branch and Bond algorithm.
9. S. Mohansehi, K. Ganesan, in their study, they proposed a new algorithm for the initial fuzzy feasible solution to a fully fuzzy transportation problem. By using Fuzzy version of modified distribution method, they obtained the fuzzy optimal solution for the fully fuzzy transportation problem without connecting to a classical transportation. They arrived at a conclusion that the fuzzy optimal solution obtained by their proposed algorithm is better than the fuzzy optimal solution obtained by the existing method.

10. Mohammed ForhadUddin and Kazushi Sano, in their study, they considered a supply chain with a coordination mechanism consisting of a single vendor and a buyer. They formulated the buyers Linear Program (LP), vendor's Integers Program (IP) and coordinated Mixed Integer Program models in the integrated supply chain. Their study found that after coordination the end customers demand and consequently individual profits, could be increased without any extra investment, also such coordination among an enterprise can reduce the consumer purchasing price as well as buyer selling price.

11. G. Carlier, in his study, he proved the existence, uniqueness, duality result and gave a characterization of optimal measure processing maps for a class of optimal transportation problem with several marginal with compact support in R.

12. Ping JI and K.F. CHU, in their study, they propose a new approach, the dual – matrix approach to solve the transportation problem, which is very efficient in terms of computation. They presented their algorithm and explain briefly as the regular simple method and the stepping-stone method.

13. Ilija NIKOLIC, in his study, he discussed the total transportation time problem regarding the time of active transportation roots. If the multiple optimal solutions exist then he proved it is possible to include other criteria as second level of criteria and find the corresponding solutions.
14. Eric V. Denardo, Uriel G. Rothblum and Arthur J. Swersey, in their study, they describe the problem in which the “cost” of satisfying the demand at a particular location is a weighted average of the travel time for the items they supplied. This problem is a linear rise by substituting for the convex function the product of a parameter and a linear term.

15. Serge Dubuc, Issa Kagabo, in his study, he proved that whenever the function $C$ is strictly superadditive, the solution corresponding to the lower Frechet bound is the unique optimal solution. This result also holds for the discrete version of the problem.

16. Udatta S. Palekar, Mark H. Karwan and Stanley Zionts, in their study, they developed a new conditional penalty for the fixed charge transportation problem. They also study the effect of problem parameters on the difficulty of the problem. Other factor which influence problem difficulty are the shape of the problem the density of permitted arcs and the density of fixed charge arcs.

17. Vishwas Deep Joshi, Nilama Gupta, in their study, they investigated the transportation problem with fractional objective function when the demanded supply quantities are varying in addition to allowing for simultaneous changes in supply and demand values the total cost bounds are directly calculated.

18. Tomomi Matsuy, in his study he proposed time algorithm for the Hitchcock transportation problem with $n$ demand points and fixed number of supply points. When the number of supply points is very small and the number of demand points is much larger than that of supply points, his algorithm is efficient.

19. Lukasz Muslewski, Maciej Woropay, Piotr Bojar, in this study a failure is referred to as exceeding permitted boundary values by significant features of the technical objective. On the basis of performed practical tests concerning times of a failure
occurrence it was found that the set of failure can be divided into subsets of primary and secondary ones. Test result revealed that the cause of occurrence of secondary failure is usually incorrect performance of primary repairs. Therefore assurance of high efficiency of repairs performed on the transport means is of great importance as this affects the level of reliability, safety and efficiency of transport tasks.

20. Miroslaw Sieriejczyk, in his study he presented a method of assessing the exploitation efficiency of transport telemetric systems in order to obtain an overall assessment of transport telemetric system. The method of evaluating was accepted for multi-state analysis of exploitation process. Using the characteristics of exploitation process he elaborated a model of exploitation efficiency of telemetric system and presented the measures of it’s evaluation.

21. Brezina, Z. Cickova, J. Pekar, M. Reiff, in this study authors considered classical transportation problem as multi commodity transportation problem with different kind of vehicles multi-stage transportation problem, transportation problem with capacity limit as an extension of the classical transportation problem considering the additional special condition for solving such problems many optimization techniques and heuristics approaches are developed. The issue discussed in the study are: theoretical base, problem formulation, new proposed algorithm for that problem.

22. Ralf Borndorfer, Martin Grotschel, Andreas Lobel, in this study authors have pointed out that discrete mathematics provides a suitable framework for planning decision within transportation systems. The mathematical approach leads to better understandings of problems. Resize and quantitative models, and advance mathematical tools allow for provable and reproducible conclusions. Modern computing equipment is suited to put such methods into practice.
23. M. Sreenivas, T. Sreenivas, in this study, they studied the approximations of optimization problem by probabilistic constraints in which the original distribution of the underlying random vector is replaced with an empirical distribution obtained from a random sample. They obtained a prior estimate on the sample size required to obtain high confidence that the sample approximation problem will yield a feasible solution to the original problem. They presented numerical illustration to illustrate how to obtain feasible solutions and optimality bounds for optimization of transportation problems with probabilistic constraints.

24. Zoltan Leikes, Endre Rev, Tivadar Farkas, Zsolt Fonyo, Tibor Kovacs and Ian, in this study, they developed a new model for multi commodity transportation and supply chain problems which included stepwise constant cost. Model is expressed as MILP problem. The new model has been tested on multi commutated problem of SAB Miller Europe, and compared to other methods from the literature. The feasibility checking is made by solving special relaxed LP problem; and the most probable physical reason is pointed out by the feasibility check results in case of non-feasibility.

25. Beatriz Lopez, Victor Munoz, Javier Murillo, in this study, they analyzed experimentally a set of representative technique the state of the art in the road passenger transportation problem which is an optimization problem in which driver should be assigned to transport services fulfilling some constraints and minimizing some function cost. Experimental results have provided them a good knowledge of several properties of the methods, as modeling expressiveness, any time behavior, computational time, memory requirements, parameters and free downloadable tools.

26. Andrew Koh, in his study, he reported on the use of differential evaluation for solving bi-level programming problem with application in the field of
transportation planning. After illustrating his solution algorithm with some mathematical function he applied this method to control problem facing the transportation network manager. Differential evaluation is integrated with conventional traffic assignment technique to solve the resulting bi-level program.

27. Kalpana Dahiya, Vanita Verma, in their study, a paradox in fixed charge capacitated transportation problem is discussed where the objective function is the sum of two linear fractional functions consisting of variable cost and fixed charges respectively. A sufficient condition for the existence of a paradox is established. Numerical illustration is given in support of theory.

28. S.R. Arrora, Archana Khurana, in their study, the three dimensional fixed charged transportation problem which is an extension of the classical three dimensional transportation problem is studied and algorithm is given to find efficient cost–time trade off pairs in a three dimensional fixed charge bi-criterion in definite quadratic transformational problem. The algorithm is illustrated with numerical examples.

29. Takahito Kuno, in his study, he extended the parameterization technique in to a class of concave production transportation problem with \( m \geq 3 \) sources, \( n \) terminals and three nonlinear variables, developed a depth-first-search algorithm for finding a globally optimal solution of this rank, three concave minimization problem and proved that the algorithm is pseudo – polynomial in the problem input length but polynomial in \( m \) and \( n \).

30. Serdar Korukoglu, Serkan Balli, in this study, Vogel’s approximation methods (VAM) which is one of the well-known transportation methods in the literature, was investigated to obtain more efficient initial solutions. A variant of VAM was proposed by using total opportunity cost and regarding alternative allocation cost. They observed that improved version of VAM (IVAM)
conspicuously obtained more efficient initial solutions for large scale
transportation problem.