

# OPTIMIZATION OF TWO-ECHELON PRODUCTION DISTRIBUTION SUPPLY CHAIN MODEL

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## **Abstract:**

The supply chain – a term now commonly used internationally – encompasses every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer. It is a bridge that connects the supply point to the demand point and vice versa. The supply chains are flexible, dynamic and complex network of organizations. Optimization problems are ever-present in the mathematical modeling of real world systems and cover a very broad range of applications. It is understood from the literature review that most of the models in supply chain were either considering inventory, transportation and production separately without considering fixed charge. Some models have taken fixed charge transportation problems, but are centered mostly on single stage supply chain distribution. In this work a production-inventory-distribution model is developed which optimizes the total cost in a two-echelon supply chain incorporating the fixed cost into the model. The model formulated considers three plants, three distributors and three retailers. This work uses the non-traditional optimization technique (Genetic Algorithm) to optimize the model. The Genetic Algorithm is coded in C++ program and the optimum cost is found for the model.