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LIFO IN GREEN SUPPLY CHAIN INVENTORY MODEL OF AUTO-COMPONENTS INDUSTRY WITH WAREHOUSES USING DIFFERENTIAL EVOLUTION

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ABSTRACT. LIFO, which stands for last-in-first-out, is a method of inventory valuation that assumes that the last items placed in inventory were sold for the first time during the accounting year. This paper reports on a method based on Differential Evolution to optimize LIFO in green supply chain inventory management of Auto-components industry. In particular, we focus on determining the most likely level of surplus stock and shortage required for LIFO in green supply chain stocks of Auto-components industry so that the total cost of the supply chain is minimized. We apply our three-phase LIFO methods to a green supply chain inventory model of Auto-components industry studied for optimization.

1. INTRODUCTION

The goal of each LIFO in the green supply chain inventory should be to maximize the total value obtained. For most LIFOs in the supply chain inventory, the value would be strongly related to the total profitability of LIFO in green supply chain inventories, which is calculated as the difference between customer revenue and the total cost of LIFO in green supply chain inventory. The higher the LIFO in green supply chain profitability, the more successful the LIFO in green

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supply chain stocks. The success of LIFO in the green supply chain should be measured in terms of LIFO in the profitability of green supply chain stocks, and not in the form of profit at a single stage. For a sustainable LIFO in the green supply chain inventory, due attention should be paid to the customer. All other cash flows are simply exchanges of funds occurring within LIFO in the green supply chain list, given that different phases have different owners. All flows of information, products or funds create costs within LIFO in the green list of the supply chain. Therefore, proper management of these flows is the key to LIFO for the success of a green supply chain inventory. Effective LIFO in supplier green chain inventory management involves the management of LIFO asset and green supply chain inventory products to maximize the overall LIFO in green supply chain return profitability. In short, in order to do all this precisely and quickly, especially with a large number of products, a system is needed that will perform a number of tasks. This includes making forecasts, calculating the correct levels of security stocks, determining the amount of economic orders, determining the best quantities of discounts, automatically adjusting variations and providing full visibility of changes throughout LIFO in the green supply chain list to enable rapid response to changes. LIFO in green supply chain stocks is only as strong as the relationships that connect sellers, buyers and other participants together. Looking at these other companies and suppliers as partners in LIFOâĂŹs success in green supply chain inventory is important and should be a top priority in the organization.

2. Literature Review

Pandey, et. al. (2019) An Analysis Marble Industry Inventory Optimization Based on Genetic Algorithms and Particle swarm optimization. Malik, et. al. (2019) Security Mechanism implemented in Gateway Service Providers. Yadav and Swami (2019) A Volume Flexible Two-Warehouse Model with Fluctuating Demand and Holding Cost under Inflation. Yadav, et. al. (2019) Supply Chain of Chemical Industry For Warehouse With Distribution Centres Using Artificial Bee Colony Algorithm. Yadav, et. al. (2020) Electronic components supply chain management of Electronic Industrial development for warehouse and its impact on the environment using Particle Swarm Optimization Algorithm. Yadav, et. al. (2020) Reliability Consideration costing method for LIFO Inventory model

with chemical industry warehouse. Yadav, et. al. (2020) proposed National Blood Bank Centre Supply Chain Management For Blockchain Application Using Genetic Algorithm. Yadav, et. al. (2020) a give Medicine Manufacturing Industries supply chain management for Blockchain application using artificial neural networks. Yadav, et. al. (2020) proposed Red Wine Industry of Supply Chain Management for Distribution Center Using Neural Networks. Yadav, et. al. (2020) a give Rose Wine industry of Supply Chain Management for Storage using Genetic Algorithm. Ahlawat, et. al.. (2020) a give White Wine Industry of Supply Chain Management for Warehouse using Neural Networks. Chauhan and Yadav (2020) proposed An Inventory Model for Deteriorating Items with Two-Warehouse & Stock Dependent Demand using Genetic algorithm. Chauhan and Yadav (2020) a give Inventory System of Automobile for Stock Dependent Demand & Inflation with Two-Distribution Center Using Genetic Algorithm. Yadav, et. al. (2020) a give Reliability Consideration costing method for LIFO Inventory model with chemical industry warehouse.

3. Differential Evolution Based LIFO in Green Supply Chain Inventory Optimization Analysis

In order for LIFO to be more efficient in green supply inventory control of Auto-components industry the main primary goal is to predict where, why and how much control is needed and such prediction should be made here through a methodology. The proposed methodology can provide appropriate stock levels to be maintained in the coming periods that will minimize the LIFO in the cost of green supply chain of Auto-components industry stocks. The supply chain model is divided into three phases in which optimization will be carried out.

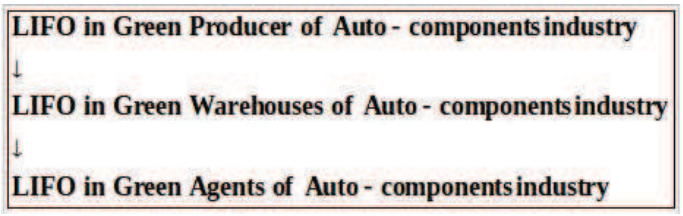

Figure 1. Three stage green supply chain (Studied Model)

In this figure 1. LIFO in the manufacturer produces of Auto-components industry different products and determines how it will be delivered to LIFO in

warehouses of Auto-components industry and how stocks will be transferred to LIFO in agents of Auto-components industry. The proposed methodology aims to determine the specific product on which to concentrate and the amount of product stocks that must be maintained by different members of LIFO in the supply chain of Auto-components industry and the methodology also analyzes the level of stocks.

4. Differential Evolution

Differential Evolution uses the randomly sampled difference in object vector pairs to control the mutation process, making it relatively new compared to other algorithms. Similar to GA, a randomly generated population is created. For each person, three more people are randomly selected. A new vector is created by adding a weighted difference (mutation factor) from two individuals to another. Crossbreeding or recombination is one of the main operators of AG, but complementary in DE. When all people are treated in this way, the physical form is evaluated. If the physical value of the new individual is better than that of the old, replace the old with the new one. This process is repeated until the maximum number of generations or convergence is reached.

5. Results and Discussions

The optimization of LIFO in green supply chain inventory control in Supply Chain Management based on Differential Evolution is analyzed with the help of MATLAB. Inventory levels for three different members of LIFO in the supply chain, LIFO in the manufacturer of Auto-components industry, LIFO in the warehouses of Auto-components industry, and LIFO in the agent of Auto-components industry are generated using the MATLAB script, and this generated data set is used to assess the effectiveness of Differential Evolution. Some examples of data sets used in implementation are listed in Table 1. Some 5 data sets are given in Table 1 and they are assumed to be records in the previous period.

Conclusion

LIFO, which stands for last-in-first out, is a method of inventory valuation that assumes that the last items placed in inventory were sold for the first time during the accounting year. LIFO in green supply chain inventory management is

TABLE 1. Some 5 Data sets are given are assumed to be records in the previous period

S.N.	LIFO in Green Producer	LIFO in Green Warehouses	LIFO in Green Agents
1	49	45	34
2	59	67	65
3	98	90	76
4	34	89	98
5	76	67	70

a significant component of supply chain management. We discussed a method based on Differential Evolution to optimize LIFO in green supply chain inventories in supply chain management, and focused on how to specifically determine the most likely surplus inventory and level of shortage required for LIFO in optimizing green chain inventory in a supply chain such that the total cost of the supply chain is kept to a minimum. We apply our methods to a three-phase supply chain optimization model. The proposed method was applied, and its performance was evaluated using MATLAB.

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