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Supply Chain Management

The paper considers the problem of creating a rational chain of grocery supply to a retail outlet where the delivery of the whole range of products is carried out from a company single logistics center (SLC) located outside the city. The focus of the research is to ensure the efficiency of the supply chain by minimizing the total costs and providing direct deliveries through the distribution center located in the city.

First, the optimal number of outlets should be determined. The increase of the total economic effect of the company's activities is achieved by optimizing the customer service coverage which is calculated based on the market share which includes such indicators as volume of sales, market capacity and half of total demand. Then, the necessary number of outlets is calculated and their coordinates are added to the sketch map of the city. Reduction of the supply chain length to decrease costs is achieved through the complex optimization of the supply chain structure and parameters. Thus, the optimal length is calculated based on the coefficient of static use of a vehicle's carrying capacity and the coefficient of SLC's relative remoteness from the city. Then the adjusted costs of the delivery to the outlets are calculated.

The second step is choosing a strategy for managing inventory. There are two inventory management strategies: a fixed order size strategy and a constant replenishment strategy. Choosing one or the other strategy is guided by the minimum of the adjusted costs. These costs include the following components: the cost of replenishment, the cost of immobilizing funds, the costs of reserve storage and checking, and the deficit related costs. Having calculated the value of each component, the most profitable strategy can be chosen.

The optimization of transport unit parameters is made based on the periodicity of supplies, the vehicle's carrying capacity and the average daily consumption of products in the distribution center. The next step is delivery of goods to the outlets which requires the optimal number of check-in points on delivery routes to guarantee the total number of outlets to be served at a particular time, and a maximum load capacity of the vehicle. The position of the DC in the city should minimize transporting when delivering products to the outlets.

The calculation of the required warehouse parameters takes into account a useful area of the warehouse, receiving and dispatch bays, an additional area and a staff area. The warehouse-related costs include lease and utility costs, equipment and salary expenses which are added to the costs mentioned above. The calculation of the economic performance indicators considers annual costs of inventory management, transportation costs, freight processing costs, and the distribution center costs.

So, company logistics development and implementation requires substantial management efforts, time resources and proper investments into staff professional training, but it definitely provides competitive advantages for a company.