# B1

## The scope of diversification of the warehouse space market in a regional configuration

Because of further development of the transport infrastructure and the decreasing availability of qualified employees in bigger agglomerations, the developers’ activities will be increasingly moved to smaller markets and medium sized towns such as Olsztyn, Elbląg, Częstochowa, towns in Eastern Poland and also locations by the Western border. The difference in the levels of employee salaries and the availability of land at an attractive price, influence the growth of investment potential.

由于运输基础设施的进一步发展和 大型集聚区合格雇员的供应减少，开发商的活动将越来越多地转移到较小的市场和 中型城镇，如奥尔斯廷、Elbląg、Czę斯托乔瓦、波兰东部的城镇以及 西部边境的地点。员工工资水平的差异和以有吸引力的价格获得土地， 影响了投资潜力的增长。

## Warehouse location problem in supply chain designing: A simulation analysis

To solve object location problems, the method of distance minimization or the gravitational method is the most common. It takes into account one criterion for location selection and works based on heuristic methods. There are also its modifications consisting of, e.g., taking into account the importance of some areas or individual recipients, as well as introducing delivery costs. However, this method is limited to simple tasks. Another way to pay attention to is the descriptive and analytical method involving the search for organizational variants for which a reduction in inventory maintenance costs offsets the sum of transport and storage costs.

Transportation between warehouses is allowed. In turn, direct transport was eliminated, which resulted from the assumptions adopted when determining the solution to the location problem - high transport and storage costs in the case of direct transport.

为了解决物体的位置问题， 距离最小化的方法或引力方法是 最常见的。它考虑 了选址的一个标准，并基于启发式方法进行工作 。还有一些修改包括 ，例如，考虑到某些 地区或个别接受者的重要性，以及引入 交付成本。但是，此方法仅限于 简单的任务。另一种需要注意的方法是 描述性和分析方法，涉及 寻找组织变种，减少库存维护成本抵消了 运输和存储成本的总和。

允许在仓库之间运输。反过来，由于在确定解决地点问题时采用的假设，即直接运输情况下运输和储存成本高，直接运输被消除。

## Capacitated Warehouse Location Model with Risk Pooling

The CLMRP models a logistics system in which a single plant ships one type of product to a set of retailers, each with an uncertain demand. Warehouses serve as the direct intermediary between the plant and the retailers for the shipment of the product and also retain safety stock to provide appropriate service levels to the retailers. The CLMRP minimizes the sum of the fixed facility location, transportation, and inventory carrying costs.

The last term is the cost of holding an average of Qj /2 units of inventory. β and θ are, respectively, the weight factors associated with the transportation and inventory costs. These weights facilitate the experimental design in which we test the relative importance of transportation and inventory costs with respect to fixed facility location costs.

## Production planning and warehouse management in supply networks with inter-facility mold transfers

The company uses a third party transporter for the distribution of its products. Unfortunately, the measure that is usually used to determine transportation cost is not the weight but rather the volume given in the number of full trucks. On the other hand, the recent delocalization in the automotive and pharmaceutical sector changed the traditional product mix that was required by each market.

该公司使用第三方运输机来分销其产品。不幸的是，通常用来确定运输成本的衡量标准不是重量，而是全卡车数量。另一方面，最近汽车和制药行业的去本地化改变了每个市场所需的传统产品结构。

These molds are typically very expensive, but can be transferred from a facility to another. Thus, to optimize its distribution costs and to some extent its holding costs, the supply network introduced in its planning model the option of mold transfers between production facilities. The argument is that the savings in the distribution costs are found to largely compensate the transfer costs of the molds.

## Computer assisted models used in the solution of warehouse location-allocation problems

The distribution planning model has four independent sources of cost: (I) All transportation costs, (2) All warehouse and inventory costs, (3) Costs and savings of expanding, opening, and closing warehouses, and (4) Production costs at the plants.

分销规划模型有四个独立的成本来源：（一） 所有运输成本，（2） 所有仓库和库存成本，（3） 扩大、打开和关闭仓库的成本和节省，以及 （4） 工厂的生产成本。

Depot location is a medium term problem of deciding how many depots to operate, and how to serve the customers from them. The major approaches to the problem are continuous location and discrete location models. Continuous Location Models Continuous location models choose sites treating latitudes and longitudes as continuous variables. Quantitative analysis of a location problem appeared in 1909 (Weber, 1909). Several factors and approaches have been considered since then. These include the economy of scale factors in the optimal distribution area for a plant/depot (Karnani, 1983). An efficient method for locating warehouses in a cartesian coordinate space has been presented (Murtagh, 1982). A comprehensive account of such models and methods for solving them are discussed by Ellon (Eilon, 1971). There are two limitations to this approach. It is difficult to provide optimus solutions to a continuous problem of moderate size. Also, in practice, potential locations are limited and transportation is not always possible along the Euclidean distances as assumed by continuous models. However, simpler versions can be used to derive insights, and assist in selecting candidate sites. Discrete Location Models models are appropriate when the site locations are selected from a set of potential sites. These models vary in complexity depending on problem features such as multi-commodlty, two stage distribution etc. which they include.

仓库位置是决定运营多少个仓库以及如何为客户提供服务的中期问题。解决问题的主要方法是连续位置和离散位置模型。连续位置模型 连续位置模型选择将纬度和经度视为连续变量的站点。1909年出现了对位置问题的定量分析（韦伯，1909年）。自那时以来，已经考虑了若干因素和方法。其中包括工厂/仓库最佳分布区域的规模因素经济（Karnani，1983年）。提出了在笛卡尔坐标空间中定位仓库的有效方法（Murtagh，1982年）。Ellon（1971年，艾隆）讨论了关于这些模型和解决这些模式和方法的全面说明。这种方法有两个限制。对于持续大小适中的问题，很难提供最佳解决方案。此外，在实践中，潜在位置有限，而且并非总是按照连续模型假设的欧几里德距离运输。但是，更简单的版本可用于获取见解，并协助选择候选站点。当从一组潜在站点中选择站点位置时，这些模型是适当的。这些模型的复杂性因问题特征而异，例如多商品、两阶段分布等。

# B2 inventory factor

## Beyond LIFO and FIFO: Exploring an Allocation-In-Fraction-Out (AIFO) policy in a two-warehouse inventory model

Each sub-replenishment that is delivered to OW and RW incurs a distinct transportation cost and undertakes a 100 per cent screening.

交付给 OW 和 RW 的每一次子补充都会产生不同的运输成本，并承担 100% 的筛查。

## On reformulations for the one-warehouse multi-retailer problem

In such problems the transportation decision consists in determining the amount to transport in each time period. As a consequence, the production of goods and their transportation to the retailers is a common problem faced by many industries and is an essential feature of a supply chain.

Transportation from the production site to a retailer incurs a fixed transportation cost ( f c t ) plus a per unit transportation cost (p˜c t ). Storage is allowed at a cost both at the production site (h0 t ) and at the retailers (hc t ). In this work, we assume there are no initial and final stocks. Also, we consider nonnegative costs and demands.

The objective function minimizes the total cost which includes variable and fixed setup production costs at the production site, variable and fixed transportation costs to the retailers, and storage costs at the production site and at the retailers.

在这种情况下，运输决策包括确定每个时间段的运输量。因此，商品的生产及其运输到零售商是许多行业面临的一个共同问题，也是供应链的一个基本特征。

## An EPQ model for two-warehouse in unremitting release pattern with two-level trade credit period concerning both supplier and retailer

The present study deals with the development of an integrated production inventory model of supplier and retailer where a delay in payment is accessible by supplier towards the retailer and also by retailer en route for customer.

本研究涉及开发供应商和零售商的综合生产库存模型，供应商可以延迟付款，也可以向零售商支付。

This type of problem was first developed by Hartely [13] with the assumption of constant demand. Sarma [38] introduced this type of model with infinite replenishment assuming the fixed transportation cost with continuous-release pattern. Liang and Zhou [28] developed a two-warehouse inventory model for deteriorating items under conditionally permissible delay in payment. Singh et al. [41] developed a two warehouse fuzzy inventory model under the conditions of permissible delay in payment. Recently Guchhait et al. [12] have developed a two storage inventory model of a deteriorating item with variable demand under partial trade credit period. Recently, several authors have presented two warehouse inventory models with different types of demand, lead time, etc. such as Lee and Hsu [27], Gayen and Pal [9], Rong et al. [36, 37] Jaggi et al. [23, 24] Maiti [31, 32] Hsieh and Dye [15]. Recently, Guria et al. [11] have presented a two level storage inventory model for deteriorating items with stock dependent demand and continuous release pattern.

这类问题最初是由哈特利[13]在持续需求的假设下开发的。Sarma [38] 引入了这种模式，采用无限补充，假设具有连续释放模式的固定运输成本。梁和周[28]开发了一个双仓库库存模型，用于在有条件允许的延迟付款的情况下，对恶化的物品进行清查。

## Fuzzy inventory model with two warehouses under possibility measure on fuzzy goal

items are ordered and transferred from W2 to W1 individually causing a large amount of ordering and transportation cost which in turn decreases average profit.

tems 被订购并从 W2 单独转移到 W1，从而造成大量的订购和运输成本，进而降低平均利润。

## A two-warehouse inventory model for items with stock-level-dependent demand rate

.The model is formulated by assuming that the demand rate is a polynomial form of current inventory level, the stock is transferred from RW to OW under a bulk release pattern and the transportation cost is taken to be dependent on the transported amount. Shortages are not allowed.

Hence, items in RW are first transferred to OW to meet the demand until the stock level in RW drops to zero and then items in OW are released. Sarma (1987) extended Hartely’s model to cover the transportation cost from RW to OW that is considered to be a fixed constant independent of the quantitybeing transported. Very recently, Kar et al. (2001) studied a two-warehouse inventorymodel for items byconsidering lot-size dependent replenishment cost, linearly time-dependent demand and finite time horizon. However, few inventorymodels with two warehouses have been found in the literature that addresses an inventory-level-dependent demand pattern.

该模型的制定假设是当前库存水平的多面体形式，库存在批量释放模式下从 RW 转移到 OW，运输成本取决于运输量。不允许短缺。

因此，RW 中的项目首先转移到 OW 以满足需求，直到 RW 中的库存水平降至零，然后 OW 中的项目被释放。Sarma （1987） 扩展了 Hartely 的模型，以支付从 RW 到 OW 的运输成本，这被认为是一个固定的常数，独立于运输数量。 最近，Kar等人（2001年）研究了一种两仓库的物品库存模型，考虑了批量依赖补充成本、线性 时间依赖需求和有限时间范围。然而，在涉及库存水平依赖型需求模式的文献中，几乎没有发现具有两个仓库的库存模式。

## A two-item two-warehouse periodic review inventory model with transshipment

The time threshold to accept a transshipment request in a warehouse increases with the emergency shipment cost. In addition, the more inventory available in the warehouse the more likely for a transshipment request to be accepted.

Each warehouse carries both bundles with the objective to minimize the total operating cost, which comprises the variable ordering cost, the holding cost at the warehouses, the cost of transshipment between warehouses, and the cost of emergency orders if transshipment is not possible.在仓库中接受转运请求的时间阈值会随着紧急装运成本的增加而增加。此外，仓库中可用的库存越多，接受转运请求的可能性就越大。

每个仓库都携带两个捆绑包，目的是将总运营成本降至最低，其中包括可变订购成本、仓库的持有成本、仓库之间的转运成本以及如果转运不可能的紧急订单成本。

## Mixups in the warehouse: Centralized and decentralized multi-plant firms

On the other hand, Benetton’s production, ordering, and shipping costs are much lower, since larger batches imply economies of scale as orders from a given region are grouped together, made together, and shipped together.