

THE METHODS OF WAREHOUSE STOCK MANAGEMENT

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Abstract . The article examines the issue of inventory turnover and the division of inventory into groups based on demand. ABC and XYZ and mixed analysis were used in the grouping of stocks. Individual groups of goods are separated and recommendations are given for making decisions in stock management. These recommendations prevent the goods from being overheated in the warehouse. It is also aimed at meeting the need for goods on time.

Key words: reserve, management, object , ABC, XYZ, need.

Introduction

Inventory management is the most important function of logistics and occupies a key place in the logistics system. Material reserves are production and technical products at various stages of production, consumption of products of the economy, and other goods for internal (personal) consumption that are expected to be used in the production process [1].

Due to the discrepancy between incoming and outgoing materials, which can accumulate at each link of the logistics chain, the flow-or delivery volume does not correspond to a single volume, the time between moments of consumption or their receipt there is a range. Depending on the functional purpose, the reserve can be current, seasonal, speculative, technological, preparatory, as well as obsolete reserves.

The main part

Reserves are one of the main factors that ensure the consistency and continuity of production. There should always be such a quantity of stock in warehouses that they should fully satisfy all production needs.

In order to establish effective production activities of the enterprise, it is necessary to optimize the management of stocks in the warehouses of the enterprise. The inventory management process has a significant impact on the operations and results of the entire enterprise. If there is a shortage of raw materials or finished products in the enterprise, this can lead to loss of profit or even loss of material resources, loss. At the same time, the saturation of warehouses with reserves can lead to freezing of working capital, additional costs of the enterprise due to the increase in their storage costs [2, 5].

It should be noted that stock management is the most important element of operational-tactical management not only in transport and production, but also for trade enterprises.

The essence of the stock management system is to make sure that their quantity is acceptable, stock should minimize stocks as much as possible without placing them in warehouses of enterprises, which helps to accelerate the turnover. The formation of a commodity - material stock management system allows to solve such problems as security of supply, minimum investment, minimum risk, simplicity of the restocking order procedure, and ensuring the stability of the commodity process. The main tasks of the formation of reserves are to provide a stable product range sufficient to achieve high growth rates of turnover and continuous operation of the organization.

Proper management of stock effectively organizes the production process and allows timely satisfaction of consumer needs. In modern economic conditions, it is necessary to rely on scientific management methods to effectively organize the process of stock management. They use various methods, tools and approaches to classify them (reserves) for each category of warehouse stocks of the enterprise, as well as to calculate the optimal amount of production and storage costs, but also

to develop algorithms for solving problems in order to reduce costs and optimize warehouse management involves the use of mathematical models that allow the output.

There are different models of resource management that can be divided into several groups [3, 4]:

- systematization of reserves - selection of those for optimization from the entire range of reserves;
- static models of stock management - all parameters of the model are unchanged over time and one-time decisions are made to determine the level of stocks;
- probabilistic inventory management models - models in which demand and available inventory are random. in many logistics systems, demand is not known in advance during the planning period and must be considered as a random variable [6].

To apply a resource management system, it is necessary to divide the object into different groups. ABC and XYZ classifications are used to solve this problem. ABC analysis is also called Pareto's law and it uses the 20/80 rule. According to the law, within this type of analysis, one-fifth, that is, 20 percent of the total number of goods, constitutes about 80 percent of the income, while the remaining 80 percent of the goods make up only 20 percent of the remaining income.

ABC analysis is organized based on the following algorithm.

1. Forming the purpose of the analysis.
2. Determination of management objects to be analyzed by the ABC method.
3. Determination of the indicator that performs the classification of control objects.
4. Evaluation of management objects based on the determined indicator.
5. Sorting the identified indicators of objects into groups in descending order.
6. ABC graph.
7. of management objects into A, B , C groups.

this algorithm, all reserves are divided into three groups (categories), the characteristics of the groups and their share in the total volume of the organization's reserves are shown in Table 1.

Table 1

Characteristics of ABC analysis groups

Group name	Product characteristics	Interest relationships
A	High value stocks	10% of the assortment can have a share of 70% of their total value
B	Average value stocks	30% of the assortment is 20% of the revenue
C	Low value stocks	60% of the assortment is 10% of the total income

Change depending on the characteristics of the reserve assortment of a particular organization, and therefore these values can be changed (the percentage can change) . As an example, let's consider the application of ABC analysis to organize the stock of the warehouse (Table 2).

Thus, based on the data presented in Table 2, we can conclude that the reserves of group A have the most important characteristics, because they are in great demand for the repair of their wagons in the wagon depot. They must always be under control and competitive. Group B products - determine good stable demand. Group C includes stocks that you can reject, change the assortment or increase the quality. We should also keep in mind that if the repairs are not done in time, it will eventually adversely affect the uniform flow of carriages and lead to uneven carriage flow.

Table 2

ABC Analysis of stock in warehouse

Stock	Price , thousand soms .	Stock (in descending order)	The value is one thousand soms . (in descending order)	share ,	Growth rate, %	Group
Product 1	25500	Product 1	25500	49	49	A
Product 2	15 80	Product 3	12540	25	74	A
Product 3	125 40	Product 5	6550	13	87	B
Product 4	50 40	Product 4	5040	10	97	C
Product 5	65 50	Product 2	1580	3	100	C
Amount	178290		178290	100		

The XYZ analysis is considered as a supplement to the ABC method analysis and involves dividing stocks into three groups based on the dynamics of product demand over time.

The XYZ analysis algorithm consists of four steps.

1. Determination of coefficients of variation for the analyzed resources.
2. Grouping of resources in accordance with the increase in the coefficient of variation.
3. Distribution of XYZ categories.
4. Graphic representation of the analysis results.

Characteristics of groups based on XYZ analysis are presented in Table 3.

3 – table

XYZ - characteristics of analysis groups

Group name	Product characteristics	Coefficient of variation
X	Stocks with a sufficiently stable demand	0% - 10%

Y	Products are distinguished by certain trends in determining the need for them	10% - 25%
Z	Stocks with erratic demand that are difficult to predict in advance.	More than 25%

We will build the performance of the XYZ model by months based on the analytical data presented in Table 4.

Table 4

Analysis of the XYZ model

Stock	December	January	February	Coefficient of variation , %	Product name	Variation coefficient , % (in ascending order)	Group
Product 1	15	30	27	33	Product 5	8	X
Product 2	22	28	18	22	Product 4	14	Y
Product 3	12	6	8	35	Product 2	22	Y
Product 4	30	33	25	14	Product 1	33	Z
Product 5	60	57	66	8	Product 3	35	Z

Presented in table 4 , we can conclude that product 5 is included in group X and has constant demand, because its coefficient of variation is equal to 8% . It is necessary to immediately replenish the warehouses of the organization with goods belonging to group Y. Due to irregular demand for products in group Z , this taking into account the decrease in the volume of reserves , the staff of the wagon depot will work on pre-ordering the products of this group it is necessary

ABC and XYZ allows to increase the efficiency of the commodity resource management system, as well as to increase the share of high-demand stock (Table 5).

Table 5

ABC and XYZ are combined analysis

	X	Y	Z
A	AX	AY (2)	A.Z (1)
B	BX	BY	BZ (3)
C	CX (5)	CY (4)	CZ

ABC and XYZ - the table presented on the basis of combined analysis combines all categories of stock and divides them into nine groups.

Conclusion

1. Stock in the white cell provide the main circulation and are in stable demand, so it is necessary to ensure their constant presence in the warehouse.
2. The dark gray cell contains important goods and will have uneven demand.
3. In the black box, there is an assortment of such products, which means that there is very little demand for such products in the enterprise.
4. The combined use of ABC and XYZ analysis creates full conditions for the availability of stocks in the wagon depot and for the timely and efficient performance of repair work and does not require large labor costs and the involvement of specialists. These analyzes make it possible to determine indicators of supply of production with reserves.

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