

COMPLEX ESTIMATION OF ECONOMIC EFFICIENCY OF INVENTORY CONTROL OF THE WHOLESALE-INTERMEDIARY ORGANIZATIONS

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In article the technique of a complex estimation of economic efficiency of inventory control of the wholesale-intermediary organizations based on system consideration of processes proceeding in external and internal environments is stated.

The complex estimation of the economic efficiency of inventory control of the wholesale-intermediary organizations (WIO) is necessary in the view of new approaches to inventory control.

The system approach allows to coordinate the actions of the subjects and objects of inventory control both internal and external. In the modern conditions it provides the use of the information control systems working in the real-time mode.

In the system analysis the object of service represents the open or closed system which can be considered as the unity of operating and operated subsystems. The first corresponds to the management of the wholesale-intermediary organizations, and the second - to the object of management.

Within the limits of the wholesale-intermediary organizations there is a problem of interaction of inventory control with other functional subsystems of WIO. So, according to the basic directions of the activity of the wholesale-intermediary organizations the following functional subsystems can be allocated in their structure: inventory control, finance and marketing.

From these positions operative inventory control, supply and marketing activity of the wholesale-intermediary organizations is a complex of methods, means and the technologies used for the effective elimination of the negative consequences, arising in practical activities, with the purpose of the achievement of the final results.

For the account of the influence of the environment it is possible to take advantage of the situational approach which provides the account of various nuances of the functioning of the wholesale-intermediary organizations.

In the systems and conditions of uncertainty it is logical to use the likelihood approach of inventory control of the wholesale-intermediary organizations. In this connection the function of management efficiency represents a set of results inside and outside the WIO, with the purposes of its functioning directed at the achievement.

$$\Phi \mathcal{E} \mathcal{V} \mathcal{Z}_{WIO} = f \{x_1, x_2, x_3, \dots x_n\}, \quad (1)$$

where $\Phi \mathcal{E} \mathcal{V} \mathcal{Z}_{WIO}$ is the function of management efficiency; $x_1, x_2, x_3, \dots x_n$ are the key logistical and functional activities of the wholesale-intermediary organizations; f is the function describing the interrelation of the processes, occurring in the managerial process.

In this connection, the function of management looks like:

(2)

where $\mathcal{E} \mathcal{P}_{cmp}$ is the efficiency of strategic inventory control of the wholesale-intermediary organizations, $\mathcal{E} \mathcal{P}_{on}$ is the efficiency of an operational administration stocks of the wholesale-intermediary organizations; $\mathcal{E} \mathcal{P}_{cuc}$ is the efficiency of the system of inventory control of the wholesale-intermediary organizations; $\mathcal{E} \mathcal{P}_{cum}$ is the efficiency of situational inventory control of the wholesale-intermediary organizations; $\mathcal{E} \mathcal{P}_{\beta ep}$ is the efficiency of the likelihood inventory control of the wholesale-intermediary organizations.

The economic benefit of rationalization of stock rates can be defined from the expression:

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$$DC = DI_{XP} + DI_{TP} + DK, \quad (3)$$

where DC is the decrease in the general costs of a WIO due to the decrease in stock rates, rbl.; DI_{XP} is the reduction of full costs by the storage of stocks, rbl.; DI_{TP} is the decrease in transport costs due to the decrease in stock rates, rbl.

The change in total storage charges we shall define with the use of the involved functionalities - the 3PL - operators from the following expression:

$$DI_{XP} = \sum_{j=1}^d (Y_{3ПО} - Y_{3ПУ}) \mu_j IY, \quad (4)$$

where $Y_{3ПО}$ and $Y_{3ПУ}$ are the stock rates of j -th MP before the rationalization, in nat. cost; IY is the specific storage charges, %; d is the quantity of MP, whose stock rate has changed at the specification of the calculation; μ_j is the price of MP, rbl.

The decrease in transport costs is defined under the formula:

$$DI_{TP} = \sum_{j=1}^d (Y_{3ПО} - Y_{3ПУ}) Z_j^{TP}, \quad (5)$$

where Z_{jMP} is the specific transport expenses on delivery of j MR, rbl.

The change of the losses on investment in connection with the presence of stocks is defined under the formula:

$$DK = \left(\sum_{j=1}^d (Y_{3ПО} - Y_{3ПУ}) \mu_j + (\Delta I_{XP} + \Delta I_{TP}) + \Delta N \right) r, \quad (6)$$

where ΔN is the change of the costs of used equipment in connection with the rationalization of stocks, rbl; r is the interest rate, %.

The losses due to MP deficiency are defined under the formula:

$$\Delta I_{Д} = \sum_{i=1}^n \Pi_i \cdot p_i \cdot t \cdot k, \quad (7)$$

where $\Delta I_{Д}$ is the losses due to the deficiency, rbl.; Π is the day time commodity circulation, nat. units.; p_i is the price of i -th kind of the resource; t is the duration of idle times, days; k is the level of the margin of WIO.

Then the general economic benefit is equal to:

$$\mathcal{E}_{эф} = DC - DI_{Д}, \quad (8)$$

The resulted procedure of stocks efficiency management of the wholesale-intermediary organizations enables to receive a quantitative estimation of the economic benefit of the introduction of the results of the research on inventory control.

The generated technique of defining the general efficiency of inventory control allows to receive a complex estimation of self-efficiency and also the efficiency of its interaction with the organizations which are a part of the environment, as well as the interaction with the wholesale-intermediary organization.

Golikov E.A. Wholesale trade. Management. Marketing. Logistics. Finance. Safety: the Uchebno-methodical grant. M., 2004.

Tokmanev S.V. Strategic and an operational administration stocks of the wholesale-intermediary organizations // INZHEKON Bulletin. A series Economy, Vol. 4. SPb., 2009.

Efficient control stocks / D. Shrajbfeder. The Lane with English. M., 2005.

Tokmanev S.V. Inventory control in system of effective service of consumers: Monograph. M., 2007.

Bauersoks D.Dzh., Kloss D.Dzh. Logistics. The integrated chain of deliveries. 2nd edition. The lane with English. M., 2005.

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