INVESTIGATION OF INVENTORY MANAGEMENT IN ENTERPRISES IN THE NORTHERN GREAT PLAIN REGION OF HUNGARY

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Abstract

We undertook a project within the frame of Regional Operational Program which is called Investigations on Enterprises and on Operative Management in the Region of Northern Great Plain. The second subprogram of this project is Investigations on Operative Management, within this we deal with inventory management as third partial program. Our objectives are to determine how much inventory to keep and how much and when to order in order to meet customer demand and also be cost effective and as well as to determine the methods of inventory in the Region of the Northern Great Plain.

We made a survey among operating enterprises in the Region to study their inventory management. We investigated inventory registration, inventory management and the technical issues of storing. The result of the survey was a summary which analyzes and evaluates the realization of inventory management.

Key words: enterprises, inventory management, cost databases

INTRODUCTION

Agricultural enterprises both farms of plant production and animal breeding deal with significant volume of inventory, which increase production and marketing time, require a great amount of capital and their handling as well as their storage go with great expenses. During inventory, tasks of storage and material handling should be solved. There are several relevant factors here, such as locating store places, proper selection of storage system, material supply and registration (Pakurár et al, 2006-a).

Inventory management handles processes that concern changes of stock levels, taking over goods, planned and not planned remitting, stock allocating, etc. It is based on real database. Every economic expert and manager should have to cope with the issues of inventory management independent from the fact whether they work in production, commercial, service or financial fields. One of the reasons is that the life rhythm of economy has significantly accelerated, and the competition has become more serious, as the opportunity to market the product depends on the relating services rather than on the product itself.

MATERIALS AND METHODS

In order to study inventory management in enterprises in the Northern Great Plain Region, we made a survey among them during the Fall of 2006. The objectives of the survey were to determine the major stock types, the willingness to use software, to clarify costs of inventory stock, to get acquainted with different methods for optimizing inventory stock level and the methods of storage.

RESULTS

With respect to stock registration, we investigated the stock types in the enterprises, shown in *Figure 1*. and *2*.

Figure 1. Distribution of Enterprises on the Basis of Available Stock Playing Role in their Activities

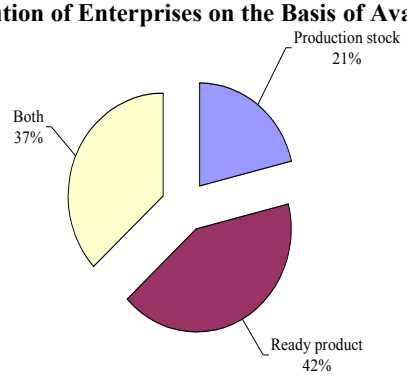


Figure 1. reflects that the inventory of ready products is common in the examined enterprises, and only 21% of them dealt with just production stock. 37% of the enterprises have both production stock and ready products.

Figure 2. shows the stocks of agricultural and industrial origin. Half of the investigated enterprises deal with industrial origin, and only 17% of them have agricultural stock. One third of the enterprises have both industrial and agricultural stocks.

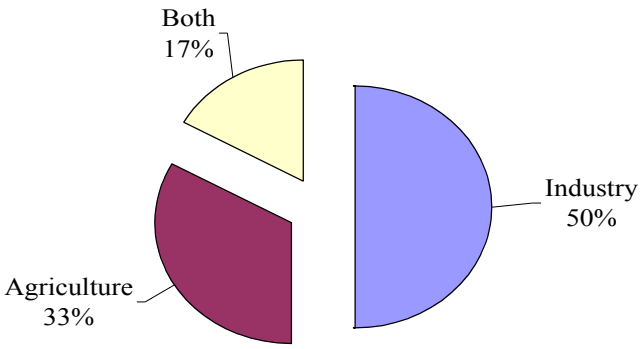
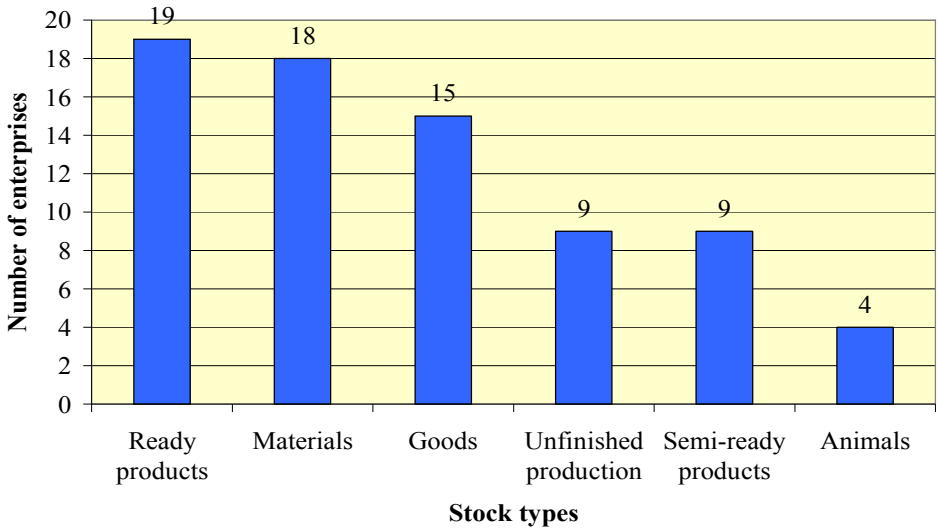


Figure 2. Distribution of Enterprises on the Basis of the Origin of the Available Stock

We determined the most typical stock types as shown in *Figure 3*.

Figure 3. Number of Enterprises Having Different Stock Types



It is clear, that ready products as well as goods are the most typical stock types in the enterprises. In case of agricultural stock, the smaller portion of the stock is produced on their own however the major portion is purchased including primarily the seed.

Within goods, mainly machine components, building materials, beverages, chemical goods, foodstuffs as well as household machines are kept.

There are several methods for stock registration. The most widespread used one is the stock registration on an average purchase price (*Figure 4*.).

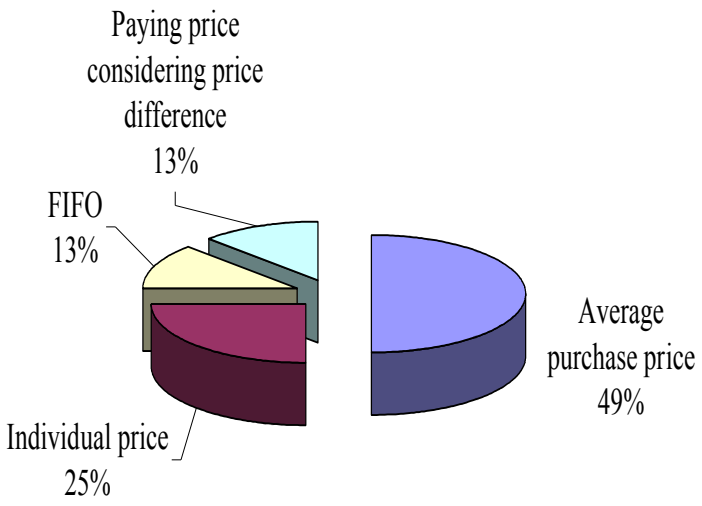


Figure 4. Distribution of Enterprises According to the Method of Stock Registration

Two thirds of the examined enterprises use software for stock registration. However, these programs have less functions relating to inventory management. The four most important characteristics of the 12 mentioned ones of these programs are the following:

- serving up-to-date data-base;
- registration of in and out storing activities;
- handling and evaluating major data of transporters and customers;
- handling financial transactions.

Inventory management handles processes that concern changes of stock levels, taking over goods, planned and not planned remitting, stock allocating, etc. It is based on real database. Every economic expert and manager should have to cope with the issues of inventory management independent from the fact whether they work in production, commercial, service or financial fields. One of the reasons is that the life rhythm of economy has significantly accelerated, and the competition has become more serious, as the opportunity to market the product depends on the relating services rather than on the product itself.

With respect to inventory management, one of the major tasks is to optimize stock level, as both high and low stock levels may cause extra costs for the enterprise (Pakurár, 2006-b). In connection with the optimizing stock level, three important cost groups should be mentioned (Susánszky-Czabán, 1989):

1. Carrying cost: one part of it relates to the physical existence of stocks (cost of storing and handling), the other part relates to the value of stocks (taxes, insurance costs).
2. Ordering cost: one part of the cost refers to transportation; the other part refers to order and taking over.
3. Shortage cost: it can rarely be reflected directly, its determination is very difficult. Sunken profit or the loss of goodwill can be mentioned as examples.

70% of the investigated enterprises do not record costs in connection with inventory stocks. Actually, it is not a surprise as there is not any database available even at a national level, which could help in cost analysis relating to stocks. Though examined enterprises were asked to estimate the ratio of these costs within the total costs. The average share of these costs is 20% which is in accordance with the international literature which suggest about 10 to 30% or 20 to 40% as costs relating to inventory stocks.

In this part the questionnaire contained topics in connection with several uncertainty factors, orders and inventory. Quality problems, disturbance in production, such as late transports and great ratio of faulty products require paying attention.

The fundamental question is that how the enterprises should determine the time of receiving and the volume of the stock being ordered at one occasion to minimize the ordering cost and shortage stock at the same time to ensure the tranquility of production (Halászné Sipos, 1998). To solve this problem there are four inventory management mechanism being available (Susánszky-Czabán, 1989; Prezenszki, 2002; Chikán, 1994; Szegedi – Prezenszki, 2003).

The basic variations of inventory mechanism are the followings:

- fixed-time period and fixed-order quantity;
- at fixed-time periods initiating order to the highest level;
- fixed-order quantity when reaching a specified reorder (minimum) level;
- when reaching a specified reorder level, initiating order to the highest level.

In case of the studied enterprises, the number of orders of different stocks is rather changing. When considering orders, the ordering period and

the order quantity were examined. The time of receiving is determined by reaching the minimal stock level. The ordered volume is either a pre-determined volume or a volume which is necessary for reaching the maximum stock level. Ordering bigger volume happens when there are price reduction or quantity price reduction.

The running time of orders is very different in case of different stock types. The control of the available inventory is continuous or periodic in 90% of the enterprises. There is an average 1 to 5% difference between the documented and the real inventory stock.

Making inventory is done by storehouse workers altogether with managers. Only 16% of the enterprises use ABC inventory planning according to the significance of the item, while 84% of them make inventory in every month, or in every six month, or annually. The causes of inventory lack are storage wastes, human defaults as well as stealing.

Where material flows break in space or time, stock develops. Inventory with its establishments, installation and equipment serves to save the consistence of stock and to harmonize material flows. Thus storehouses should be handled as complex establishment, which have external connections and internal processes.

Traditionally, companies maintained generous inventory levels to meet long-term customer demand because there were fewer competitors and products in a generally sheltered market environment. In the current international business environment, with more competitors and highly diverse markets in which new products are rapidly and continually introduced. Thus the level of inventory has increased. In production firms besides final products, there are stock of materials and equipment which serve production. The high cost of inventory has motivated managers to make the supply chain efficient, due to the non-harmonized transportations and much failure higher inventory level is necessary. The storing systems of the asked enterprises are mainly that of stand, static without stand, and storing on loading surface. Handling materials happens by hand, small hand-operated machines, barrows or loading machines. The use up of ready product storehouses occurs on the basis of significance in case of 50% of the enterprises, 30% chose FIFO (first in first out) method, and 20% carried out LIFO (last in first out) and RND (random) method.

Enterprises, however, may decide that they do not create storehouses, thus they do not have to bother with the incurring costs. In this case, they can ensure the secure production by the method ‘just in time’, which makes neglecting storing possible. Another solution for this problem is the separation of storing. It means that enterprises let this activity to others, like speditors. Today, distribution and logistic centers become more

popular, which provide several logistic service besides storing goods (Halászné Sipos, 1998).

DISCUSSIONS

One of the crucial tasks is to establish the optimal logistics and inventory management of enterprises. The distance from the market influences the successful operation of a given enterprise. By increasing distance, entrepreneurs willing to accumulate huge inventory stock regardless the high costs relating to stocks. Though, it should be considered whether it is worth ordering for more times. If carrying costs are lower than the costs of maintaining stock, then the answer is yes, that is it is worth ordering for several times. Unfortunately, there is not a sufficient database and proper software for enterprises to analyze their costs and to make them able to consider this fact.

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