

## ETHICAL ASPECTS OF INVENTORY MANAGEMENT IN AN AGRICULTURAL ENTERPRISE

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### ABSTRACT

Inventory management has a different meaning in agriculture than in a commercial chain, but it is just as important. In most cases, the purpose of the inventory is to satisfy demand. Demand and supply do not always meet at a predetermined place and time but are shaped by external circumstances. It is the same in agriculture. Our research aims to present and compare simple inventory management methods through a practical agricultural example and to examine the ethical aspects. To manage inventory, we have to make an appropriate decision in the following two questions: when to order and how much to order. There are three basic inventory mechanisms: cycle inventory, damping inventory, and two-warehouse inventory. There are three levels within business ethics: macro-, meso-, and micro-level. In the case of the examined agricultural limited company, the meso- and micro-levels are affected by ethical problems. When handling inventory improperly, can the employee be held liable, or is the company responsible? The agricultural sector began to develop, which is mainly the result of developments in the use of information technology. Even so, many farms still use outdated methods, which should be changed to operate more economically.

Keywords: agricultural inventory management, ethics, procurement, sales

### 1. INTRODUCTION

An agricultural company close to Szeged farms nearly 900 hectares of land, and 680 Holstein-Friesian dairy cows and their offspring are part of the herd. That is about 1,200 head of cattle. Thirty-five workers carry out the daily tasks, among whom are also the workers providing animal husbandry and crop cultivation. Long-term employee retention is difficult because job switching for better financial opportunities is typical in this area [1] [2]. Since the territory is large and the number of animals is also very high, the turnover rate of the individual products used in the farm is quite high, which is precisely why the continuous flow of information is vital because this is the only way to respond to individual events in a timely manner.

Inventory management in agriculture has a different meaning than in a commercial chain, but its significance is nevertheless great. The question may arise, why do we keep inventory? In most cases, demand and supply do not always coincide at a predetermined location and time but instead are influenced by external factors. The same happens in agriculture.

Inventory is needed to adapt to market conditions, prevent unexpected procurement or sales problems, and take advantage of beneficial business opportunities. Lack of inventory can lead to stagnant production, which is unacceptable in an area like milk production. One of the results of inadequate inventory management at the farm under study was not so long ago: a daily production drop of 1,300 litres was experienced, causing a loss of a million forints for the company. And all this was due to an employee delaying an order necessary for animal feeding. An ethical question immediately arises: what kind of responsibility does the employee have? Can employees be held responsible in such cases?

### 2. THE IMPORTANCE OF INVENTORY MANAGEMENT

The purpose of inventory management is to ensure the stability of production and distribution processes, guided by the interest that, with the help of this stability, stockpiling contributes to the continuous and safe operation of the entire economic system. Inventory management covers the entire material flow process from the extraction of raw materials to consumption.

As a rule, it is neither physically nor economically expedient to produce individual specific products when and where the need arises for them [3]. Physical and economic necessity justifies the presence of inventory. The physical necessity arises from the need to perform actual production and product flow. We also have to consider the development of storage processes - the development of costs associated with storage. Attila Chikán breaks down the cost categories related to inventory as follows [4]:

1. Costs of inventory storage:
  - maintenance and operating costs and depreciation of warehouse buildings and premises (e.g. lighting and heating costs, wage costs of warehouse workers and common public charges thereof), costs of committed assets in warehouse buildings and equipment, etc.,
  - material handling costs,
  - rental fee of foreign warehouses,
  - storage loss (caused by damage, disintegrating, quality deterioration, theft),
  - special handling and storage costs (e.g. flammable, explosive materials),
  - administration costs related to storage,
  - inventory costs related to the value of the product,
  - asset commitment costs,
  - profitability norm,
  - losses from obsolescence and depreciation,
  - insurance costs,
  - wage costs related to registration and accounting.
2. Types of inventory replenishment costs:
  - costs to be paid to the supplier,
  - costs related to ordering and receiving,
  - general administrative costs,
  - material costs,
  - reception and material handling costs,
  - quality control costs,
  - the costs of damage or loss during transport.
3. The costs of the shortage:
  - loss of goodwill,
  - missed or delayed profits,
  - additional administrative costs,
  - additional cost of additional procurement,
  - wage costs,
  - late payment penalty.

Different organizations participate in the successive phases of the supply chain, between which goods transfer transactions take place, in which there is always a seller and a buyer, the mediating medium is the market [5].

We have to make an appropriate decision in the following two questions:

- When to order?
- How much to order?

There are basically two types of answers to the first question. The time of the order can depend on the quantity of inventory and the length of time that has passed since the last order [6].

If the time of the order depends on the inventory quantity, the order can happen at any time compared to the time of the final order. In this case, one must constantly monitor the inventory level. Systems in which the time of order depends on the inventory level are called continuous inventory control systems. At the examined agricultural company, there was a constant need for inventory control, mainly because of the livestock.

If the time of the order depends on the time elapsed since the last order, one has to check the inventory level at specific intervals. The order quantity has to be determined based on the inventory level at the checkpoints. These systems are called periodic inventory control systems.

In the case of using a continuous inventory control system, when the inventory level drops to the order point, a predetermined quantity has to be ordered based on the forecasted demand. The quantity to be ordered is the economic order quantity calculated from the forecasted demand and the costs of inventory keeping and series start-up. If the quantity in stock does not decrease piece by piece, the order quantity will be greater than the fixed quantity by the amount the inventory level is less than the order threshold. In such cases, it is not the quantity to be ordered that is ultimately fixed, but the stock available at the time of the order and the amount of the ordered quantity. This amount is also called the inventory target. In the case of periodic inventory control systems, the quantities that can be ordered at fixed times can also be determined based on a stock target. The order quantity will be the difference between this stock target and the inventory quantity [7].

### 3. BASIC INVENTORY MECHANISMS

Three basic inventory mechanisms exist:

- a) cycle inventory,
- b) damping inventory,
- c) two-warehouse inventory.

In the case of cycle inventory management, it is typical that the order time is constant, and the order quantity depends on the development of the demand and the maximum inventory level. Assuming a constant replenishment delay, the company has to order so much that upon arrival, the sum of the inventory level and the ordered quantity is at the maximum. The advantage is the possibility of periodic inventory checks due to the fixed order time. The disadvantage is that because of the constantly changing order quantity, there is less chance of a sales discount. In this case, there is a relatively large amount of safety stock. It is advisable to use this mechanism in cases where the utilization is near-constant and has only a small variance. The delivery terms and deadlines are fixed and can be kept.

The damping inventory management method also requires a maximum inventory level and a given and constant order quantity size. Thus, the dates and demand of the orders are determined by the development of utilization. The order quantity is permanent, the seller and supplier can calculate, so there is a greater chance of getting a discount. When the demands largely fluctuate, the calculations may be inaccurate.

We speak of a two-warehouse inventory control mechanism when we order a given quantity after reaching the minimum allowable inventory level. The advantage is that due to the safety inventory level, the shortage can be eliminated in case of constant use of the inventory, and the order quantity size can be constant. The disadvantage of this method is that if the use of inventory is fluctuating, it is difficult to plan the time of the order, it requires some level of inventory, and the shortage cannot be eliminated either. Costs can be further increased by having to constantly monitor inventory levels. This method can be applied if the inventory use is relatively constant, the procurement time is short, and the inventory and shortage costs are high [8].

After placing the order, the ordered goods have to be delivered. In the next step, the goods are received. The arrival and then the movement of the goods can be tracked. During stocking and storage, the goods are stocked up. Then, during continuous use and release, the quantity of the goods begins to decrease. Issuing goods can also be tracked with certificates.

### 4. ETHICAL APPROACH AND RELEVANCE

We distinguish three levels within business ethics. These are macro-, meso-, and micro-level [9]. In the present case, the meso- and micro-levels are affected by the mentioned ethical problem, which arose at the enterprise level and the individual.

The meso-level is the level of organizations. In this case, the subject of the ethical investigation is large, medium, and small enterprises, as well as other organizations.

Problems within the enterprise can be the following: bribery, fraud, sexual harassment, etc. It also includes taking into account the interests of relevant groups (stakeholders) from the enterprise's point of view (product liability, consumer protection, environmental protection), developing morally legitimate strategies, ethical aspects of the enterprise's subsystems, the institutionalization of ethics within the enterprise, and the creation of an ethical enterprise culture. In our case, this includes the conflict between employer and employee.

Micro-level business ethics deals with the individuals who operate in the economy. Their morality is examined during economic and business transactions. Here we record the problem of role conflicts, the change of values and interests that play a role in the decision-making process, the examination of management ethos and the issue of individual responsibility found in our case study, which provides a practical example of applied ethics.

In the case of the ethical connections of management, it is crucial to be careful. We should assess it from more than just the enterprise's perspective: both the natural and artificial environments need to be considered. Nowadays, this ethical reciprocity extends to businesses and institutions operating in the area, the population living, working, and studying there, and - in the case of enterprises engaged in agricultural activities - the ethical keeping of animals, the cultivation of the land, and the culture and the way of life of the countryside, especially in farms or small settlements [10].

Applied ethics means the application of moral principles to economic connections and problems [11].

## 5. INVENTORY MANAGEMENT OF THE EXAMINED LIMITED COMPANY

The inventory management of the examined limited company can be planned quite well in advance since the rate of inventory usage is constant even when calculated with a certain margin of error. The necessary information is available for planning, and inventory monitoring is just a kind of safety precaution that allows orders to be placed whenever necessary. The company has a relationship with its partners through an assignment contract. The main objective of inventory management is to maintain production continuity, which is typically based on customer orders, to prevent inventory levels from leading to excessively high capital commitments and storage costs [12].

In the case of this limited company, the purpose of inventory management is to ensure operation and manage surplus, while in trade, the purpose of inventory management is to satisfy demand.

Regarding the origin of the incoming goods, they can be self-produced or purchased. Regardless of their nature, the company uses income receipts to receive incoming products into the warehouse. Harvested crops are registered upon harvest and purchases are registered upon arrival.

The company uses the cash receipt form, which can be purchased commercially, but self-made receipts can also be used. An invoice or delivery note is required to complete the receipt, which must be created when the supplies are received.

The completed receipts must include the supplier, the claimant, the method of delivery, the order number, and the warehouse information. It is necessary to indicate the name, number, size, quality, quantity, and price of the goods received. The same procedure is followed in the case of outward movement. The goal of dual registration is transparency.

The most critical inventory management issue of the animal husbandry unit is to ensure a full and continuous supply of animals. For this, the company must base its decisions on the size of the existing livestock and modify its inventory management, purchasing, selling, and sowing plans for the following year accordingly. To guarantee a continuous and complete supply for the animals, an outside company continuously creates a feeding plan based on the forage nutritional values, which makes further calculation simple.

Utilizing some purchased software is yet another option for inventory management: for example, the Forint-Soft inventory register software, which also allows logging of movements or the Gensoft inventory register software. With the programs, we can follow the movement of various goods from ordering to invoicing. Each product can have multiple prices that can be customized for specific customers, allowing us to register

discounts as well. We can also assign a deposit payment to the outgoing invoice, which will appear on the invoice.

## 6. CONCLUSIONS

Overall, we can conclude that inventory management is crucial to the smooth operation of enterprises. This inventory management is also present in the everyday life of agricultural companies because it is necessary to ensure the storage of the harvested crop. The farmer can choose from different options, such as solving the storage within the enterprise's capacity or entering into a commission contract for wage storage. We must not forget the additional costs either. These include the movement of stored materials, the paperwork for tracking relocation, or protection against rodents and gassing.

In the case of the company under investigation, there is no scientific basis for inventory management. Simply due to the calculable consumption, the expected inventory reduction can be planned, and, in addition, the various inventories are under continuous monitoring. There is also the possibility of error, which can cause significant loss of income and material damage. Several ethical questions may arise regarding responsibility: Can the employee be held liable, or is the company responsible?

The company uses its own Excel spreadsheet to track their inventories, but there is also a computer program to do that. Computer software has many additional functions that can help the farmer. In every case, the movement of goods is also recorded in writing for later use by accounting.

In this way, traceability is complete, which is essential for enterprises. The entire agricultural sector began to develop, which is mainly the result of developments in the use of information technology. Nonetheless, many farms still use outdated methods, which should be developed to operate more economically. Even Excel spreadsheets can be used to create simple IT products, and creating custom functions can help with the necessary calculations [13]. The automatic generation of follow-up documents for inventory movement can be simply implemented [14].

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