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ORGANIZATION AND WAREHOUSE MANAGEMENT IN DAIRY COOPERATIVE Y

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In this paper, the organisation of warehousing and warehouse management in one of the leading Dairy Cooperatives in Poland, hereinafter referred to as "Dairy Cooperative Y" have been investigated. The selection of the Cooperative was made in a conscious and targeted manner. The main objective of the paper was to determine the role of warehouse management in the operation of an enterprise from the agribusiness sector. Data were collected on the basis of an interview with the employees of the enterprises. The data related to the year 2011. The indicator analysis shows that the warehouse management of the cooperative is quite good, and the company is a well-organised unit which successfully implements production and shipment plans and shows a high quality of customer support.

Keywords: warehouse management, dairy cooperatives, agribusiness sector

1. Introduction

According to the Polish standard, warehouse is defined as an operational and organisational unit designed for the storage of material goods (stock) in a separate space, storage building, in accordance with an established technology, equipped with adequate technical devices and measures, managed and operated by a team of people with appropriate skills [12]. H. CH. Pfohl defines warehouse as a link in the logistics chain where goods are temporarily stored and then routed to subsequent links in the supply network [13]. Warehouses may be both points of delivery and

receipt, and points of concentration or distribution of the flow of goods in the logistics system [8]. The basis processes occurring in warehouses are movement and storage. The prevalence of certain processes depends on the role to be fulfilled by the warehouse [1]. In addition to their primary function, i.e. storage, quite often, warehouses need to offer a number of other services to their customers. The most important of such services are: completion of shipments, customising, packaging, repackaging and labelling of goods, and quite frequently, the after-sales service [6, 10]. Some of the aforementioned activities are included in the very definition of storage, which is defined as a set of activities related to temporary receipt, warehousing, storage, completion, movement, maintenance, keeping records, controlling and release of goods [9].

In the warehouses should focus on the components of such facilities. The most important components are: stocks, separate space, costs related to the implementation of warehouse processes, organisation and personnel [11].

Warehouse management is defined as an activity involving a series of measures, organisational, technical and economic operations, associated with storage of warehouse stocks [3]. Storage and handling of stocks are activities, coordinated in time and space, involving stockpiling and storage of goods (including handling activities – change of location, in-house transportation), care and control [2]. The organisation of warehouse management should be governed by normative laws of corporate level in the form of orders, regulations, instructions. A set of such documents constitutes the formal and legal basis for warehouse organisation (or warehouse management) [5]. Warehouse management may be quite crucial in competing against other companies.

The agribusiness enterprises are still unexplored in terms of logistic solutions, including the solutions related to use of the information systems. The entities active in this sector differ from other production and service companies [7]. There are only a few detailed studies on management of logistics in agribusiness enterprises [14]. Therefore the subject taken is very important.

2. Methods of research

In this paper, the organisation of warehousing and warehouse management in one of the leading Dairy Cooperatives in Poland, hereinafter referred to as “Dairy Cooperative Y” have been investigated. The selection of the Cooperative was made in a conscious and targeted manner of the companies of dairy sector. The main objective of the paper was to determine the role of warehouse management in the operation of an enterprise from the agribusiness sector. Data were collected on the basis of an interview with the manager and the employees of the logistics department, and the employees of the cottage cheese production department. They enabled the author to define the organisation of warehouse management.

In addition, this paper suggests a number of improvements which could be introduced in the examined warehouse. The data related to the year 2011. For the purpose of evaluation of warehouse management, the author made use of operational and logistics indicators related to the functioning of the warehouse, as well as performance indicators of warehouse space. The data are presented in a descriptive and graphic manner. This paper describe the organization of the warehouse. The best for this purpose are descriptive and graphical methods.

3. Results

Problem to be solved is define the organisation of warehouse management. In addition, this paper be suggested a number of improvements which could be introduced in the examined warehouse.

Dairy Cooperative Y has become one of the leading processors of milk in Poland through the use of various types of storage, IT and organisational solutions. One of the lasts solutions applied in the cooperative is the introduction of the SAP information system. This is an ERP system supporting the management of company's resources. The advantage of this solution is the possibility to use a single system for all areas of company's operation.

Another solution facilitating the work in the warehouse is the application of the ABC/XYZ analysis in the storage of goods. The analysis is based on such a distribution of goods in the warehouse as to allow their collection as quickly as possible. The choice of the place of storage is made on the basis of the analysis of the frequency and the volume of collections for a given assortment group. Moreover, the method is adapted to the specifics of individual customers. For instance, pallet units stored for the most important customer (who regularly orders large quantities of goods), are placed closest to the goods release zone. The ABC/XYZ method is applied in this manner in the case of export orders which do not constitute a large percentage of the total number of shipments. Most orders are processed for domestic customers where the ABC/XYZ method is applied by analysing the frequency and the volume of collections for a given assortment group [10].

Another solution applied in the warehouse management of the enterprise is associated with the methods of order completion. The employee working in the picking zone, compiles loading units in accordance with individual orders, i.e. processes one order at a time. He applies to so-called "goods-to-man" method which facilitates the process of picking, and does not require the employee to move around the picking zone, unlike the traditional method of "man-to-goods". Having completed the order, the employee of the picking department carries out a quantitative check in order to ensure its compliance [4].

The size of the cottage cheese production hall was inadequate to its needs. The passage from the production hall to the picking zone was very often quite busy and consequently there were congestions in this area of the plant. Moreover, the way between the individual production lines was too narrow to accommodate two loaded manual stackers. Containers for one production line and carton trays for another line were supplied from the same picking zone (Figure 1). The production hall was not suitable for the storage of such materials on its premises. Quite often, materials were stored wherever space was available. The employees had to focus on problem solving instead of limiting their activities to the support of the production line.

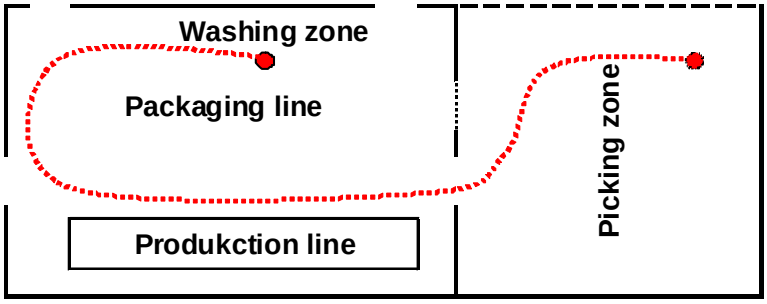

Figure 1. The road between washing zone and packaging storage

Another problem was the length of the passage between the container cleaning zone, for containers used for production at the other line, and the zone where the containers were stored. The employee had to move quite long distances in order to transport clean containers to their place of storage. There were also some issues related to the process of completion. The only tool at the disposal of the employee who had the task of evaluating the degree of order completion was a calculator. There were no other supporting tools enabling him/her to control the person in charge of order completion. Evaluation of the degree of order completion, carried out merely on the basis of the expertise of the employee, could result in incomplete supplies, and consequently, dissatisfaction of the customer. A similar problem was observed at the point of packing of finished goods into appropriate containers at the production line. Sometimes, as many as 60 packages are placed into containers, and also in this case, the success of order processing depends on the person responsible for the task.

Quick shipment processing was hindered by the lack of a loading ramp. Loading was performed from the level of warehouse floor. The problem was particularly acute whenever there was a large amount of orders to be processed. The aforementioned problems stemmed from the fact that, prior to its adaption to warehousing functions, the facility was used for different purposes.

Another difficulty in the warehouse management was caused by the lack of a modern system for recording inventory in the finished goods warehouse. When loading the trailer, the employee identifies loading units on the basis of logistics labels. Employees with certain expertise in this area were able to load the trailer seamlessly. With a larger number of orders, this manner of order processing may become insufficient. Recording systems used nowadays are more economical. Modern systems require both investment in equipment and human resources, and improvement of the IT system, but in the long run, they lead to a measurable cost reduction.

Warehouse management may be evaluated in a number of ways. One of the best methods in this area is an indicator analysis. It is carried out by interpreting the values of indicators determined on the basis of parameters which are characteristic for the warehouse. In this paper, the author used selected indicators which suit the examined warehouse of semi-products and finished goods. Calculations were made on the basis of figures received from the test company for the year 2011.

The first group of indicators are logistics indicators related to the operation of the warehouse. The percentage ratio of orders accepted for processing to the total number of received orders in the test period indicates the capacity of the company to process customer orders (W1 = 99.5%). The value of the ratio should be evaluated positively, very few orders were left without processing. Another indicator is the percentage ratio of processed orders to the total number of accepted orders (W2 = 99.8%). The value of the ratio indicates that almost every order is processed. The percentage ratio of error-free supplies to the total number of completed supplies enables you to determine the efficiency and accuracy of the work performed in the warehouse (W3= 96.7 %). The value of the ratio is indicative of the well-organised work in the warehouse, however there are still some areas for improvement. Another indicator relates to the timeliness of supplies. The percentage ratio of orders completed with delay in the Dairy Cooperative Y in 2011 was low (W4 = 8%). This value indicated that in the test period, the facility showed a high level of customer support. One of the key indicators is the indicator of supplies which received customer complaints, at least partially, illustrating the level of customer support. Also in this case, the company makes its best efforts to keep the indicator as low as possible (W5 = 0.5%). The value of the indicator shows a negligible number of complaints, in terms of supplies, which proves good work organisation and a high level of customer support. Logistics indicators related to the operation of the warehouse were high. The warehouse showed high levels of customer support, as well as a good and accurate work organisation.

Performance indicators allow for the evaluation of storage efficiency, or the efficiency of surface use or space use in the warehouse. This paper presents two of the most important indicators in this group. In the finished goods warehouse of the

cottage cheese production plant, storage is performed in blocks, and no storage devices are used. In this case, the optimal values of indicators are different from those attributable to shelf storage. The first index value is the indicator of efficiency of the use of warehouse storage surface (W6 = 0.651). The value of the indicator proves a good level of storage surface use in the warehouse. It is assumed that the optimal value of the indicator should be around 0.75 for the storage method applied at the Dairy Cooperative Y. Another index value is the indicator of the efficiency of space use (W7 = 0.489), which shows an average use of the warehouse capacity. On average, this indicator amounts to 0.50 – 0.56. The values of both indicators are typical of block storage and close to the optimal level. The level of the use of the capacity of the warehouse should be evaluated positively. Shelf storage could enable easier access to selected loading units, however, the level of the surface use and space use indicators would be significantly lower. The analysis made use of indicators which are most adequate for finished goods warehouses, the storage method, the specifics of the company and the FMCG (Fast Moving Consumer Goods) industry.

The basic problem of the examined cottage cheese production department is the lack of available space. After investing in the expansion, a number of changes could be introduced on the plant premises. One method of cost and storage space reduction is for plants to specialise in the production of certain goods. In the examined plant, free space could be used for storing materials for their production, such as containers of package foils. With more space, there would be an opportunity to develop another passage between the dirty zone and the picking zone. This would improve internal transportation.

Another suggestion is to improve the process of picking by exercising more control over the loading unit being completed. At the route of the tray with the goods, a gate calculating the number of passing items, should be installed. This would reduce the number of incorrectly completed units.

Another investment to be consider is the development of a loading ramp. Loading from the level of the floor significantly lengthens its time. Fork lifting trucks, or trucks with lifts, should be applied. The cost of expanding the warehouse to include the loading ramp would be considerable, but as a result, the loading process would be much quicker. All these solutions could improve the flexibility of the plant and enable it to respond to the changing conditions with more speed. Any investment in infrastructure is expensive, and the benefits are spread over a number of years.

4. Summary

The purpose of the paper was to examine and describe the operation of the warehouse management on the basis of Dairy Cooperative Y, one of the leaders in the milk processing sector. Warehouse management may be quite crucial in competing against other companies. The paper focuses on the cottage cheese production department. The organisation of the warehouse management was evaluated positively, as satisfactory, but the author identified some problems which need to be solved. The most important problems are: low availability of warehouse space, irregular arrangement of zones, and lack of up-to-date system for recording of loading units in the warehouse. The indicator analysis shows that the warehouse management of the cooperative is quite good, and the company is a well-organised unit which successfully implements production and shipment plans and shows a high quality of customer support.

A number of suggestions for warehouse management improvement have been made. The most important change to be considered is the specialisation of the plants in a particular type of production. Manufacture of specific products will lead to cost reduction and storage space demands. A suggestion for the improvement of the picking process has been made as well, by means of installation of a system for calculating the number of products delivered to the picking zone.

The companies may benefit much from implementing logistic solutions in their activity, among others, by using modern IT tools. A limitation, especially for small businesses is the cost of purchasing and implementing these solutions.

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