

THE SCOPE OF THE USE OF SOLUTIONS TO SUPPORT LOGISTICS PROCESSES IN THE CEREALS PROCESSING COMPANIES

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Abstract. Companies from the agribusiness sector, including those dealing with the processing of cereals are still insufficiently recognized in terms of logistics solutions. The paper examined the various functional areas of logistics in these enterprises. The level and the range of solutions supporting logistics processes varied. Identified factors are affecting the level of logistics. In the research the level of IT applications in the management of logistic activities was also specified.

Key words. Logistic processes, processing of cereals, agribusiness.

1. INTRODUCTION

Nowadays, logistics is increasingly important. The possibility of managing the flow of cargo with “one hand” allows shortening of the time from production to the delivery of product to its final recipient [1]. Thus, logistics is about managing problems related to integration of the aspects of logistics processes, which are measured by units of time and space. Logistics allows overcoming time and space in the flow of goods [2].

Logistics stays in numerous relations with many functional areas such as production, marketing, accounting. Among the most important actions performed within the framework of logistics there are relocation and transport, warehousing and storage, packaging, materials manipulation, controls of stock, execution of orders, demand forecast, customer service, location of facilities and warehouses, collecting and removal of wastes [3].

The process can be defined as a number of interconnected actions aimed at achieving a specific goal. A process is defined as a logistics process, if the distribution, status and flow of its constituents require coordination with other processes owing to the criteria of location, time, costs and efficiency of fulfilling the paramount objectives of the organization. The literature of the subject often separates logistics processes on the basis of a functional division of an organization’s activity

areas (procurement, production, distribution). The process oriented approach in the scope of logistics focuses on coordination and, simultaneously, on the integration (uniting) functions and the units performing certain actions within an enterprise [4]. The main constituents of logistics processes have been presented in figure 1. The primary goal of logistics processes is to provide proper efficiency of the flow or proper customer service with minimum costs [5].

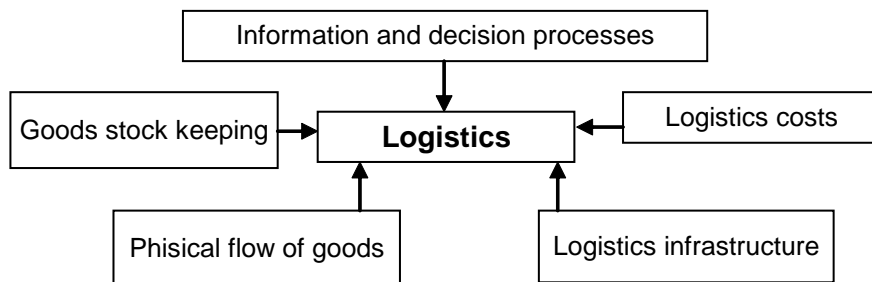


Figure 1. Main elements of logistic processes.

Source: own elaboration on base on [5].

Apart from the flow effectiveness, the costs of the applied solutions are a very important element of assessment regarding logistics in an enterprise. One pursues finding an economic balance between the outlays on an efficient service of the stream of materials and service quality [6]. Attention should be also paid to the fact that the costs of logistics are of growing importance within the costs incurred by enterprises. Except the customer service level, their height depends also on the competition on the market. Among the particular cost types there are strong substitution dependencies [7]. In 2008, the costs of logistics increased by 20 % in comparison to 2003. The reason for such situation was an increase in the costs related to escalated recipients' requirements. The reduction of expenditure in supply chains did not bring much effect [8].

The agricultural business sector has not been examined yet as concerns solutions in logistics. So far, commercial and service enterprises or international concerns have been more interested in logistics. In today's economy it became a vital element of every enterprise's activities, including those belonging to the agricultural business sector [9]. Grain processing is one of the branches of agricultural business. On the turn of the 20th and the 21st century, in the Polish grain and flour-milling market, strong concentration processes were observed. As a result of competition, small enterprises went bankrupt and large companies underwent a significant internal growth. In line with these events there were acquisitions and mergers created by concerns. These processes contributed to greater consolidation of the grain processing sector [10].

2. METHODS OF RESEARCH

The objective of the paper was to identify the solutions supporting logistics processes in grain processing enterprises. The data was gathered based on a poll based research carried out from December 2009 to March 2010. The questionnaires were sent to all the enterprises amongst small, medium-sized and large enterprises operating in the food processing sector, which were found in the Companies Registration Office (REGON). In total, there were 8,498 questionnaires send. 428 replies were obtained (5.04%). The data for the present paper was used without its processing. The analyses did not take into account the records with no data. Among the examined grain processing enterprises there were 13 micro enterprises (up to 9 employees), 15 small enterprises (up to 49 employees) and 9 medium-sized enterprises (respectively, up to 249 employees and more).

3. RESULTS

Micro and small enterprises dealing with grain processing did not have a separated department or a person who would handle logistics (fig. 2). Such organizational unit was, however, separated in 75% of middle-sized and large enterprises. Thus, the scale of activity influenced the organization of logistics in enterprises. The level of logistics organization in the particular areas of the grain processing enterprises was low (fig. 3). A separate department or a person dealing with logistics was found in 36% of enterprises, stock and warehouse: 23%, information: 13%, and packaging: 3%. Among medium-sized and large enterprises, 38% had separate departments within the areas. A smaller percentage was found in micro enterprises (15%), and the smallest one in small enterprises (4%).

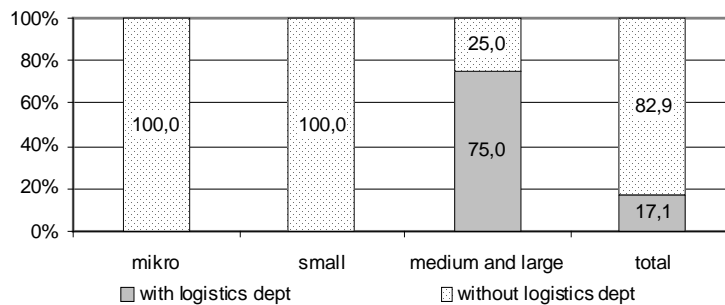


Figure 2. Organization of logistics on researched enterprises.

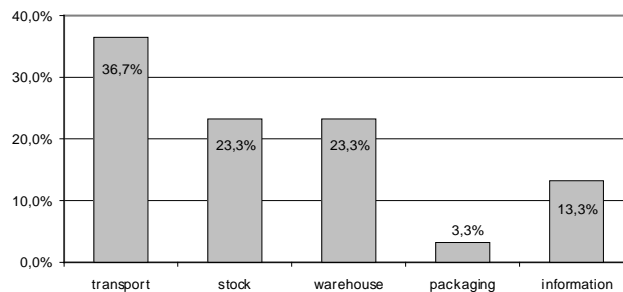


Figure 3. Areas of logistics activity with the separate organizational departments.

Most often, the costs recording was applied by the grain processing enterprises in the area of warehouse economy (fig. 4). Only 14% of entities recorded costs in the area of transport and packaging. Recording in the field of IT was not applied. 20% of micro enterprises maintained a register of costs as well as 13% of medium-sized and large entities and 3% of small ones. Few businesses defined their level of logistics costs as very high (fig. 5). In principle, the logistics costs were defined as very small (1-4% in the total costs), small (5-9%) or high (10-14%).

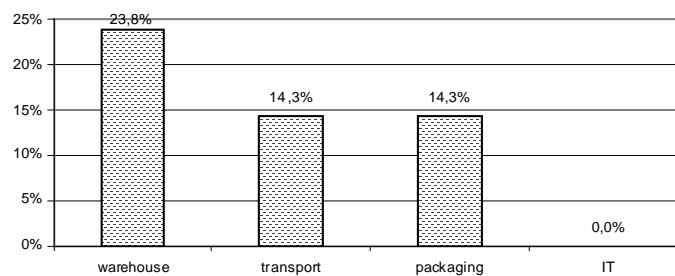


Figure 4. The areas of logistic with separate costs evidence.

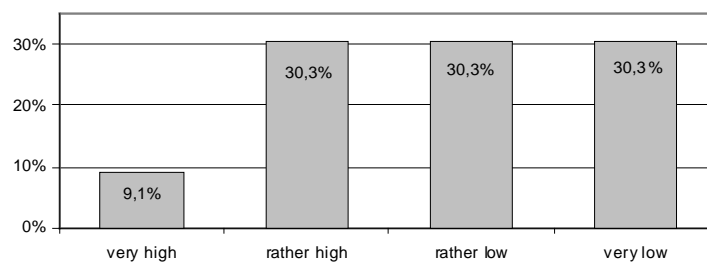


Figure 5. The level of cost of logistic activities in enterprises.

In the majority of businesses, stock was recorded in writing (fig. 6). Only 30% maintained electronic records and 9% had electronic automatic records. In every enterprise, an important aspect of stock management is to defined the margin of safety. In most entities, this margin was set intuitively, on the basis of their employees' experience (fig. 7). In every third enterprise covered by the poll an analysis of demand was carried out. In every fifth, no safety margin was set. In the case of finished goods stock, employees also based their work on intuition (fig. 8). The analysis of changes in demand was applied often, while other methods were used rather rarely. Few enterprises set their stock at the predefined level.

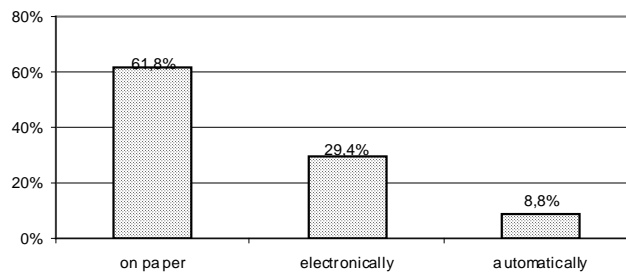


Figure 6. Methods of stock records.

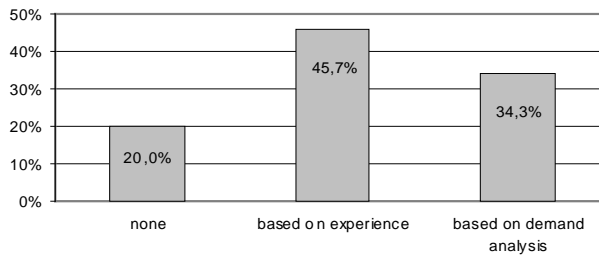


Figure 7. Methods of calculation of safety stock level.

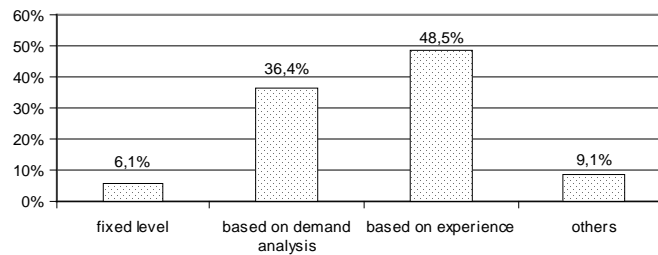


Figure 8. Methods of calculation the level of finished goods.

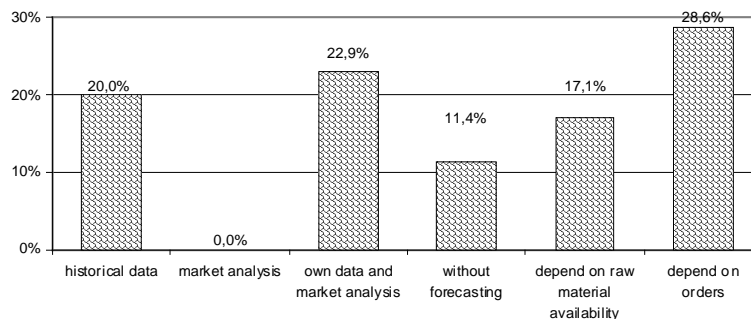


Figure 9. Sources of information about the planned consumption of raw material and demand for the finished goods.

Enterprises did not use many sources to prepare their plans of procurement regarding raw materials and demand of finished goods (fig. 9). In principle, they were producing when the raw material was available or when an order was placed. If every, they used archive data from the company and papers describing the grain market. Only micro enterprises did not make forecast.

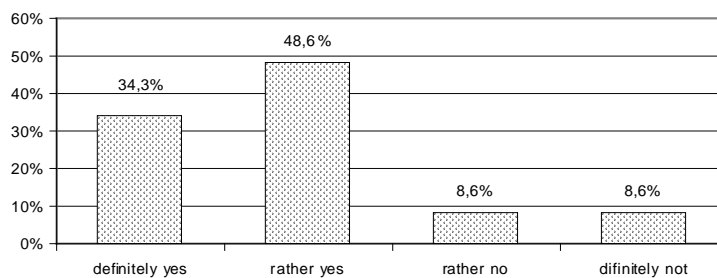


Figure 10. Sufficiency of warehouses in the scope of functionality.

Regarding the types of activity, grain processing enterprises should have an appropriate warehouse base. In most of the cases, the examined companies were self-sufficient in the scope of the warehouse surface and the functionality of warehouses related to the receipt, storage, completing and giving out goods (fig. 10 and fig. 11).

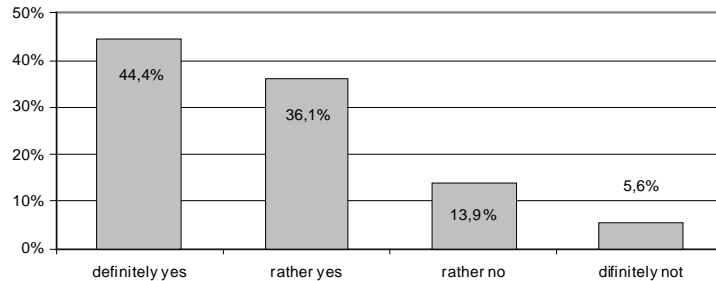


Figure 11. Sufficiency of storage space in warehouses.

In the transport field, most of the enterprises transported goods by their own means (fig. 12). Only one company, which was one of medium-sized companies as concerns employment, used only external transportation. Large enterprises used mainly their own transport. Apart from their own transportation, small and micro enterprises also combined their own and external transport means. Forwarding services were used to a small extent in the shipping process organization (fig. 13). Usually, businesses preferred own transportation (without transport services 51%), or just provision of only transport services.

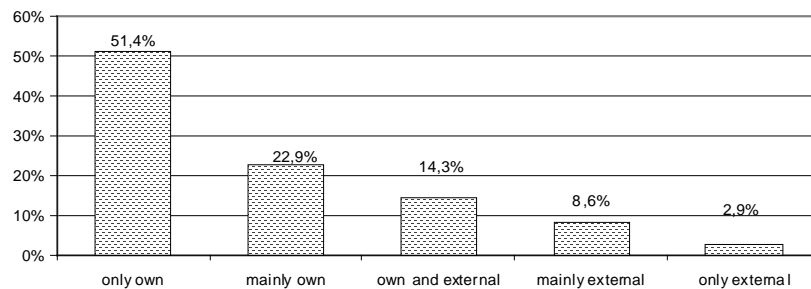


Figure 12. Share of own and external transport services.



Figure 13. The scope of external transport services.

In every enterprise, information is very important and companies should process it too. In the case of grain processing enterprises, most of them did not have one IT system to support their comprehensive logistics (fig. 14). Chiefly, this situation was related to small companies. IT systems were applied in all areas of logistics (fig. 15). Most often, they facilitated work in the warehouse, transport, further, management of stock and orders. The smallest support covered the area of packaging management. In the case of medium-sized and large business, the percentage of companies applying IT support in logistics was at a higher level than in small and micro enterprises.

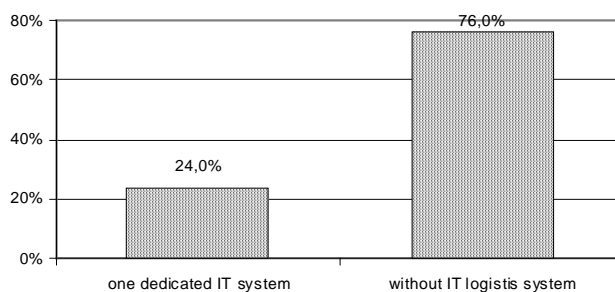


Figure 14. The share of enterprises with dedicated IT solutions for logistics.

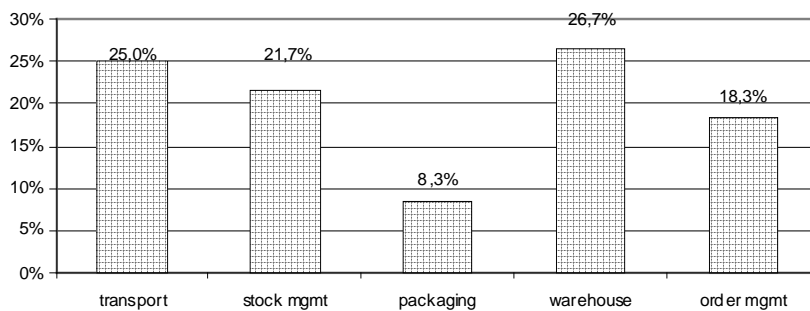


Figure 15. Areas of logistic activities supported by IT system.

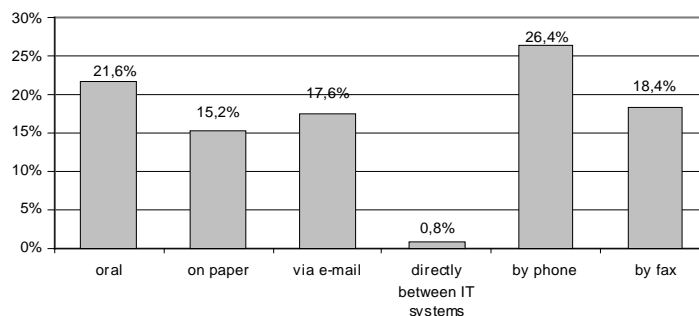


Figure 16. Techniques of communication between logistic partners of enterprises.

Numerous forms were used with regard to the information transfer (fig. 16). Most often, telephone, direct contact, fax, email and paper were used to this end. The simplest forms of transfer (verbal, by telephone and by fax) were used in the small scale enterprises. Similar percentage of medium-sized and large companies used all the methods.

4. CONCLUSION

The scope of the applied solutions supporting logistics processes in grain processing enterprises was diversified. In spite of the consolidation processes, there were always entities with different scales of operations in the market. In principle, the larger an enterprise, the more advanced logistics solutions were applied.

Amongst the most important areas supported by logistics there are transport and warehousing. The scope of logistics costs recording was minor and it concerned mostly warehouse economy. In most of the companies, the costs of logistics constituted a small share of the total enterprise costs.

The stock recording was made in writing, less frequently in an electronic form. As concerns setting the safety margin, or the margin of finished goods, one used mainly the knowledge and experience of employees. Demand analysis were applied to a smaller extent.

Owing to the type of the conducted activity, the enterprises were self-sufficient with regard to the surface of warehouse and their functionality. Most of the companies performed transport by their own means. Thus, in most cases transport services were not used and if they were used, it concerned only shipping services.

Small scale companies use IT to support their logistics to a small degree. As a rule, large enterprises had one comprehensive IT system. It support was related to

all areas of logistics, packaging – to the smallest extent. Numerous forms of information transfer were used – telephone, direct contact and fax being the most popular ones.

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