LOGISTIC IN PRODUCTION SYSTEM

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Abstract

Paper presents an analysis of the logistics system. The analysis covered the production system manufacture of cement. Logistics system, which was analyzed consists of the delivery, the preparation and distribution of cement. Analysis of stream flow values has been made and identify areas of improvement of the system.

Keywords: Logistics, production system, improvement, reliability of supplies

1. INTRODUCTION

The paper presents organization and implementation of sales in the production system. Supporting decision-making and information logistics department was presented on the example of the functioning of the cement plant. An important element of the presented work is to improve the system of internal logistics and information flow. The aim of the study is to analyze the structure of logistics management elements in relation to the manufacturing process Cement Plant. Also of interest is the use of corporate knowledge in improving standards of systems used to manage the production and distribution.

2. COMPANY'S LOGISTICS SYSTEM

The company's organizational unit, which deals with logistic activities there are designated activities and tasks of this unit. Manager of the logistics department is responsible for activities concerning the [1]:

- the movement and transport of goods (materials, raw materials and articles),
- warehousing and storage,
- industrial packaging, control the level of stocks,
- execution of orders,
- demand forecasting,
- production planning,
- purchases,
- customer service at the appropriate level,
- location of factories and warehouses,
- the processing of returns,
- supply of spare parts and after-sales sernice,
- storing and disposal of waste products.

Logistics department located within the sales department structure includes its actions transport, supply, distribution, storage of finished products and materials. The combination of logistics department with sales division, functions in the company, which has its own distribution network. The purpose of this division is in this case primarily to provide logistic distribution, but also to supply essential materials.

The organization of the logistics position as the operational coordinator, is used when the various logistical tasks were assigned to departments and agencies, and the need to supervise their. In this case, the coordinator is located in production or trade. Its tasks include the analysis requiring decision-making in the field of cooperation of several organizational units [1, 2].

The process model of the company is related to the implementation and the dynamic development of the logistics concept. In the modern transformation of structures, processes, which are implemented in enterprises, particularly a very important role is played by the processes of integrated logistics. The model company processes customer-oriented it is the execution of orders is a key, fundamental and primary process. However, all other processes in this type of model is presented as another independent processes (**Figure 1**).

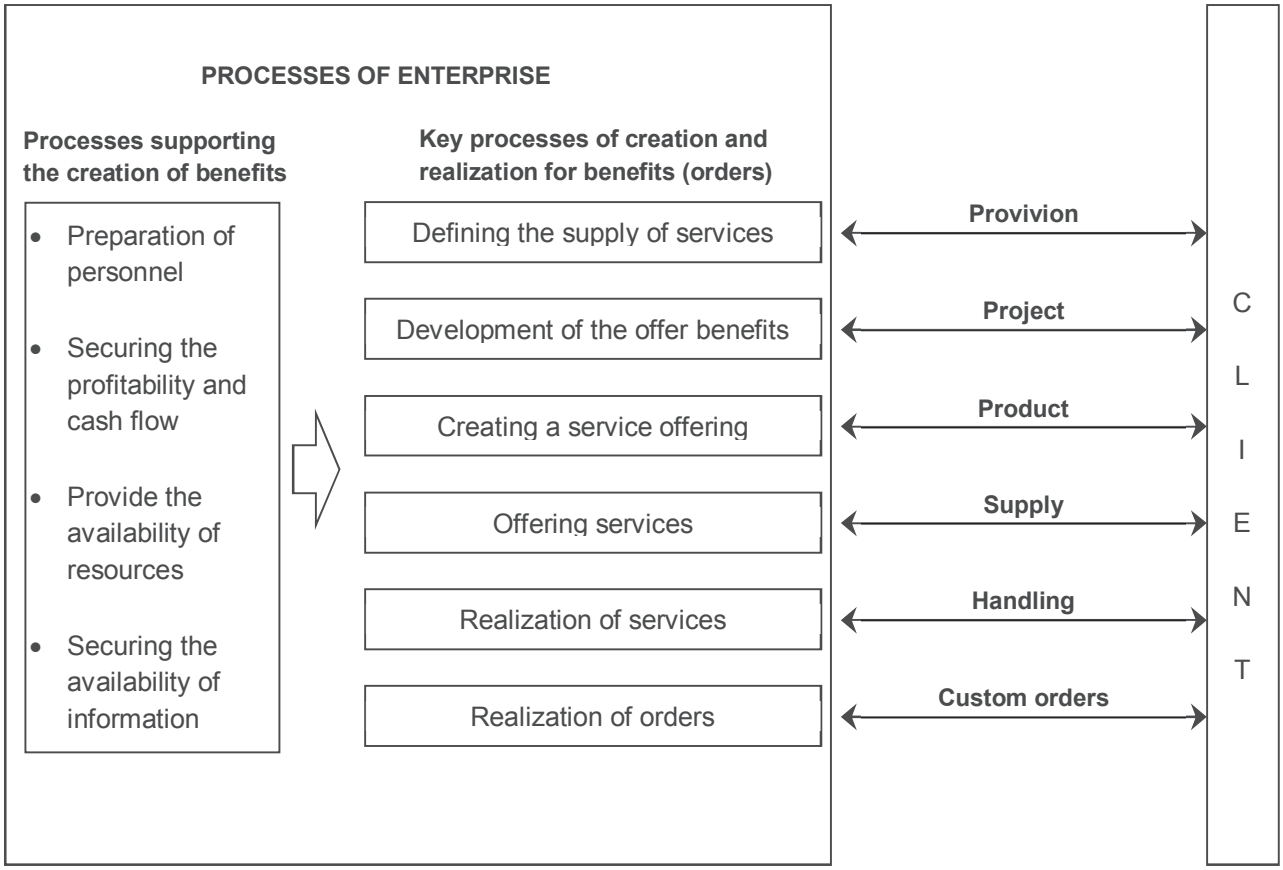

Figure 1 Customer-oriented model of business process

In addition to the key processes of orders and creation of services, creating services they were separated as the supporting processes. This concept is the basis of disposal and execution of key of business process, while ensuring the development of production capacities and new possibilities benefits to customers. Generally, you can not expect a uniform definition of the processes, but you can differentiate and divide the processes according to the specific characteristics (criteria) and define different types of process models. Therefore, the product development process is taken into account in each of the models of business process as a separate process [2, 3]. The logistics process of creating and offering services can be presented as a model of input-process-effects (**Figure 2**).

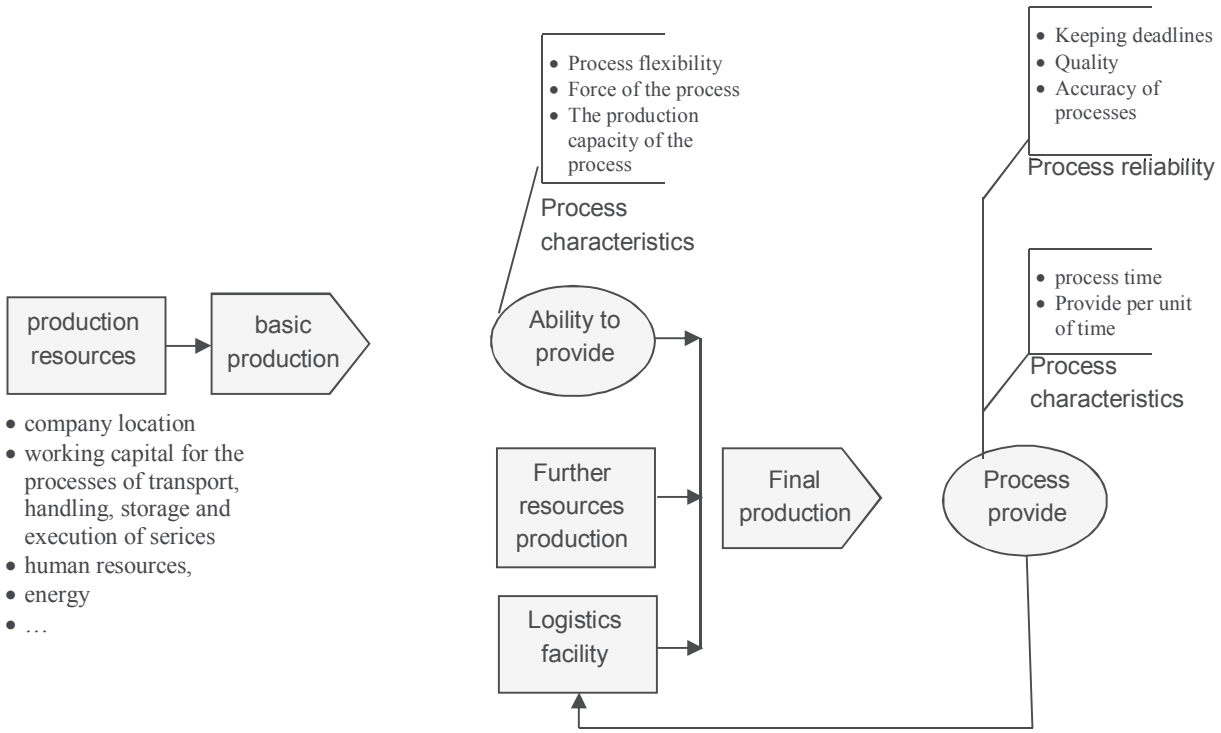

Figure 2 The basic model of the logistics of creating and offering services

Expenditures required for the processes are formed by two groups of agents. The first is expenditure on the objects logistics (materials, goods and information), which are dynamic variables, and their use is determined by the availability of space and time. The production process itself is considered from the point of view of the nature of logistics service in two phases: pre-production and final production [3].

2.1. Analysis of supply chain processes

The essence of the mapping process is to analyze the functioning of the system. This process may include a single process or set of processes and their inter-linkages. The mapping involves the development of graphic diagrams organizational or activities that make up the business process. It is useful in the audit, where it is important to understand the sequence of individual actions and identify primarily those that do not increase value-added [3, 4].

Process maps are used to make changes in the functioning of the economic system by the way:

- implementation of quality management systems
- implementation of process management,
- implement the Lean Manufacturing,
- modeling the organizational structure,
- organization of the company during the restructuring,
- shortening the runtime of processes,
- reduce the costs of carrying out the processes
- implementation of integrated systems,
- transition to a business based on the Internet,
- creation of integrated supply chains.

The second stage is in the accurate identification and grouping the processes and includes:

- division of processes for implementing (main) and support (auxiliary),
- emphasize the key processes from the point of view attain its business objectives,
- reflection processes within individual departments.

The mapping of processes is often used, the following procedure:

- identifying the main participants in the process using a technique called mapping relationship,
- creating a detailed map of the process, presenting all the components of the process [5].

The mapping relationships in the supply chain diagram shows the basic units involved in the logistics processes in the supply chain, and the relationships and cross movement of goods and their associated information. Mapping of relationships allows for a better understanding of the functioning the supply chain by all participants and to reduce the barriers to functional and hierarchical. In addition, the mapping also allows you to improve cooperation between the various links in the relationship sender - the recipient, as well as determining the holders, who are to participate in the further improvement of the analyzed of processes.

A more detailed map is used during the implementation of new products into production or when the cause of the problem are searched in a process in which there are many operations (combining materials handling, etc.). Sometimes when you create process maps can be identified lots of places where it is wasted time (and therefore money) or there is a risk that inconsistent products can be delivered to the next of the process (or customer). Distinction of these elements allows their subsequent elimination.

2.2. Reference models in the supply chain

To describe and comprehensive analysis of the supply chain the most commonly used **Supply-chain operations reference SCOR** *(Supply Chain Operation Reference-Model), which is published by the organization* SCC *(Supply-Chain Council).*

This approach takes into account the growing complexity of the business environment and the challenges associated with a holistic approach to supply chain management. This model is based on five main processes, SCM (Supply Chain Management): planning, procurement, manufacturing, delivery and returns and distinguishes four levels of detail. The model does not include items such as: administration, sales, technology development, design, after-sales service [6].

Competitive with this model is the SCM Model proposed by the Association of Global Supply Chain GSCF *{Global Supply Chain Forum).* This model is based on the eight main processes SCM *{Supply Chain Management):*

I. *Customer Relationship Management*,
II. *Customer Service Management*,
III. *Demand Management*,
IV. *Order Fulfillment,*
V. *Manufacturing Flow Management*,
VI. *Supplier Realtionship Management*,
VII. *Product Development and Commercialization*,
VIII. *Returns Management*.

3. MAPPING PROCESS IN RESEARCH COMPANIES

Cement Plant is located in central Poland, and its main owner is a foreign company. The cement plant has two lines for the production of clinker for dry method. The plant uses its own deposits of limestone from which it is transported on a production line by road transport. Element allowing the material to produce is a branch of

laboratory. Units of laboratory involved in the control and admission materials, raw materials and semi-finished products in various stages of the process. The manufacturing process is conducted in a continuous movement. Scheme production of cement by the dry method is shown in **Figure 3**.

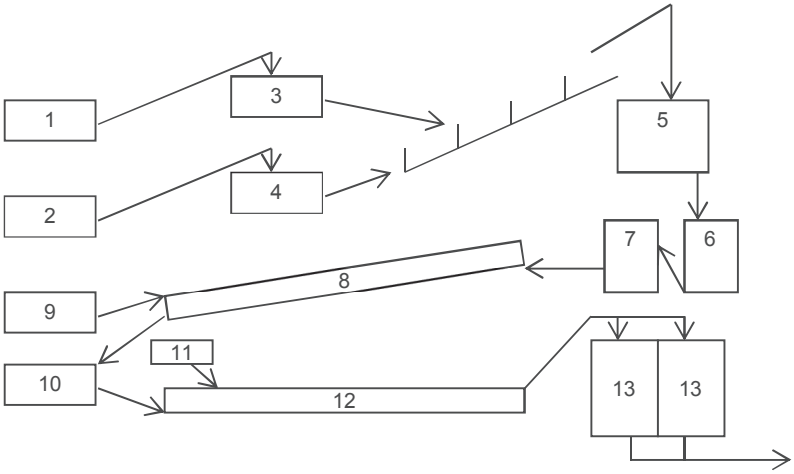

Figure 3 Diagram of cement production by dry method implemented in the studied cement plant
(legend: 1 - crusher clay, 2 - Stone crusher limestone, 3 - averaging clay, 4 - averaging limestone, 5 - the drying-grinding mill, 6 - homogenization, 7 - tank flour raw material 8 - rotary furnace, 9 - the fuel tank, 10 - tank clinker, 11 - tank plaster, 12 - clinker mill, 13 - cement silos)

Based on the established process, shall be determined targets for further processing components. Objectives of the processes are defined in accordance with the aims of the organization and the expectations and requirements of customers (internal and external) in the process. The goals are defined a particular year and supplemented by current assessment of progress in the implementation tasks in the process according to the needs in the register "evaluation process". The developed card and the designated changes in purposes of the organization are approved by top management.

The strategy of logistics distribution in factories is based on reliable and timely delivery of products to the company's customers. These transport is implemented either from the production plant as a the external storage. Cement plant sells either bulk cement which cement workowanego. It is sent by car transport and rail. Deliveries of cement are realized their own transport organized by the customer (delivery exwork) and transport organized by the Cement Production Plant (car fleet and rail).

4. SUMMARY

Operational risk refers to the many logistics subsystems logistics. It affects the entire supply chain and is mainly due to the imperfections of the current management focused on the supply, manufacture or market goods. Consolidates the various risks associated with the logistics, it is worth get taken a look a group of companies carrying out joint actions. These actions are necessary to meet the demand for certain products in the whole chain movement of goods - from obtaining supplies of raw materials to the final consumer. Such actions may be: the development, production, sales, service, supply, distribution, management, actions to support [7, 8, 9].

The risk is considered both in terms of all phases of the product life cycle (starting from the idea, its production, and ending with the appeal) as well as the processes that create them (occurring in each phase of the product life). The various phases of realization of the product can be implemented across the organization or the physical network that starts at the supplier and ending with the final customer. The basis of the offer logistics of the company's products is the delivery of a cement plant directly to the customer in the "free-recipient",

which is implemented by means of road and rail transport. The main advantage of the sales franco is the total liability of the supplier for the product purchased by the customer, ie. The recipient does not bear any risk related to the transportTo provide customers with the highest standard of service, Cement plant uses modern means of transport, using the services of professional external transport companies.

The basic condition for the effective functioning of logistic processes are efficient flow of information streams, their range, structure and punctuality. Therefore, the Cement plant used programs to support the process of sales and logistics, with the use of IT.

Understanding the process as logically ordered sequence of processes (operations) occurring within a specified period of time in organizational change fully in line with this concept. Literature identifies three main stages of organizational change: defrosting, which motivates people to change and prepares the organization, a change in the activities carried out in all functional areas of the organization and freeze - which comes to integrating and stabilizing transformation.

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