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IN-HOUSE TRANSPORT AS A PART OF BUSINESS LOGISTICS

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The paper deals with selected issues related to the enterprise management services. On the basis of transport and transport logistics tool suggests possible rationalization of transport logistics. The paper stresses the role of in-house transport as an integrating element of internal logistics processes. The paper highlights the importance and possible elements of transport infrastructure factory.

Keywords: in-house transport, logistics

INTRODUCTION

Transport as an activity due to the need for relocation of material goods and people interested in logistics has particularly important role. Therefore in essence, logistics processes are not feasible without spatial, temporal and structural changes of material and information flows. Specialization of individual economic entities deployed specifically for certain activities or products may cause the necessary changes in place, condition, location and time changes.

Transport decisively influences the fulfillment of the basic tasks of logistics - the supply of goods and services in the right place at the right time, in the right amounts and administrative costs incurred. In the value chain adds value just moving products from their site of origin to point of consumption, while also creating time contribution of fast and reliable transfer. This added value may create a right only in conjunction with other aspects, namely the right quality and quantity. Products damaged or soiled during transportation do not decide any value, but rather the loss. The same applies to carriage of excess or insufficient quantity, (Seidl, Šimák 2007).

TRANSPORT AND TRANSPORT LOGISTICS

Transport ensures the movement of a products (but also people, reports) to the place of consumption. Transport is a link between businesses and whole sectors of the economy. Compared with other sectors, transport is a number of peculiarities resulting from the performance of the functions.

One of the characteristic features of transport is an intangible product that is not possible to produce for stock. This means that the service provided (change of spatial object transportation) is directly consumed by transport users. Resolution processes of manufacturing of transport product from the process of consumption of this product reflect the following terms:

– the right to **transport** the product - manufacturing process is focused on internal transport site operator, implementing and managing the movement of vehicles, including their operational maintenance,
– **transportation** that reflects the technological, economic and legal links with transport users, is focused on external relations with other sectors of national economy, government authorities and customers.

Optimization of material and information flows in the logistics chain as one of the key goals of logistics, is fully applicable to the traffic and transport processes. Logistic approach to managing the movement of goods on a transport network from the receipt of the shipment (shipper) after the transfer (recipient) is the content of transport logistics. Transport logistics deals with solving logistics tasks and measures to be implemented in the preparation and implementation of transport. It deals with particular activities related to material

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flow, the storage of finished products to sales, including examination of information relating to these activities. (Figure 1).

Transport logistics applies these rationalization tools (Gurr, 1999):
- standardization of packaging and transport means, or ancillary transportation equipments (pallets, containers etc.),
- increase the specific gravity of the load (more weight and volume of transportation conditions),
- reduction in of stocks through "sensitive" ordering policy given the current needs (taking into account the expected fluctuations in demand),
- adjust of production and other processes within high speed,
- temporal and spatial formation of all the outgoing handling units,
- handling spatial concentration (elimination of trips),
- establish the timing of linear transport (shortening waiting times),
- reduce inventory by reducing the number of external stores,
- business or production scheduling (optimization of material flow),
- development of integrated information systems (reduction of times crossing point traffic control processes in real time).

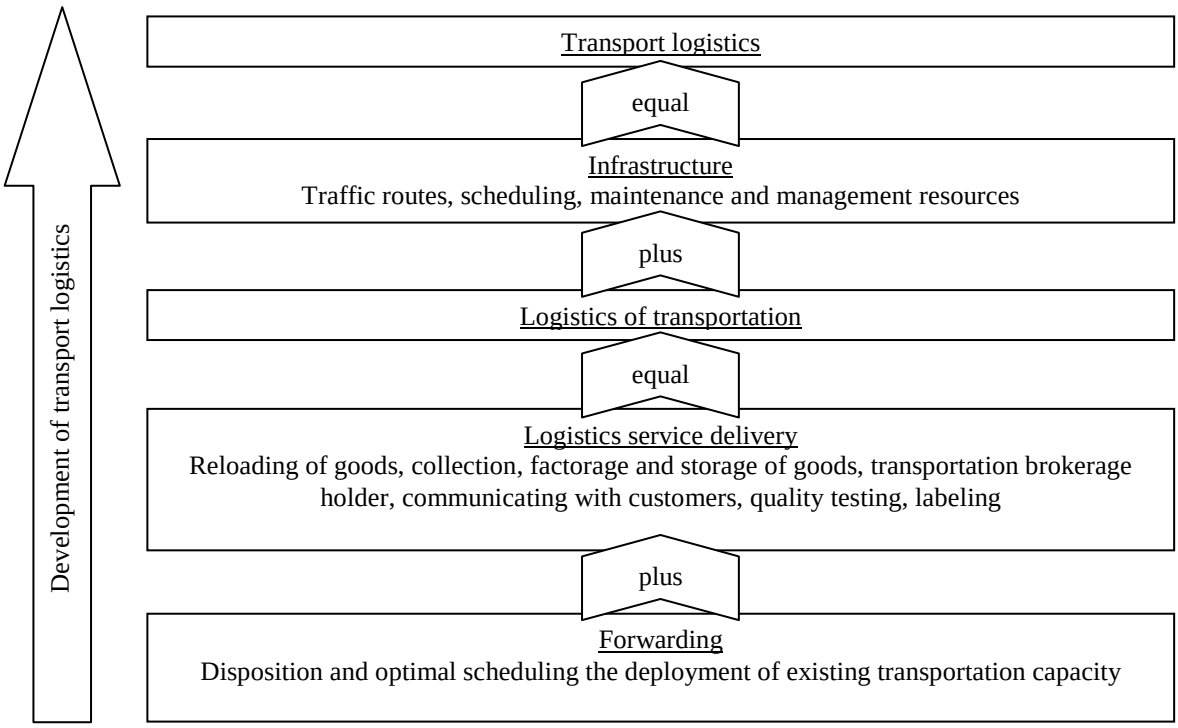

Figure 1: Parts of transport logistics (Haase, 2002)

For the distribution and transport systems are used a number of the criteria. In logistics, traffic systems assessed mainly from two aspects:
- by a holder (land, air, water and pipeline transport systems),
- under the scope (in-house and out-plant transport systems).

IN-HOUSE TRANSPORT SYSTEM MANAGEMENT

The basic task is for in-house transport to ensure optimum material flow occurring in the micro-logistic system (the manufacturing enterprise, commercial enterprise, etc.). Duties in-house transport includes the transportation of material, raw materials and intermediate input goods in the warehouse, from warehouse to production (assembly) between production centers, and transportation of finished products for shipping. In terms of the key business activities (manufacturing, service) is a factory transport ancillary activity, done for their own use. This does not diminish its importance as a fundamental function in integrating the overall logistics system business.

The in–house transport position in the corporate micro-logistic transport system is shown in figure 2.

Formation, management and ongoing development of the factory is the main objective of traffic management in-house transport system. This goal raises two basic tasks:

– **Optimization of logistics services for complex variables** into account to the whole value chain in-house. Creation and development of the factory transport model must therefore define the comprehensive logistics strategy for the company to avoid partial optimization. Transport policy adopted by the factory based on determining the degree of fulfillment of the requirements of organizational component, using the services in the factory traffic, (Lambert et al., 2000).

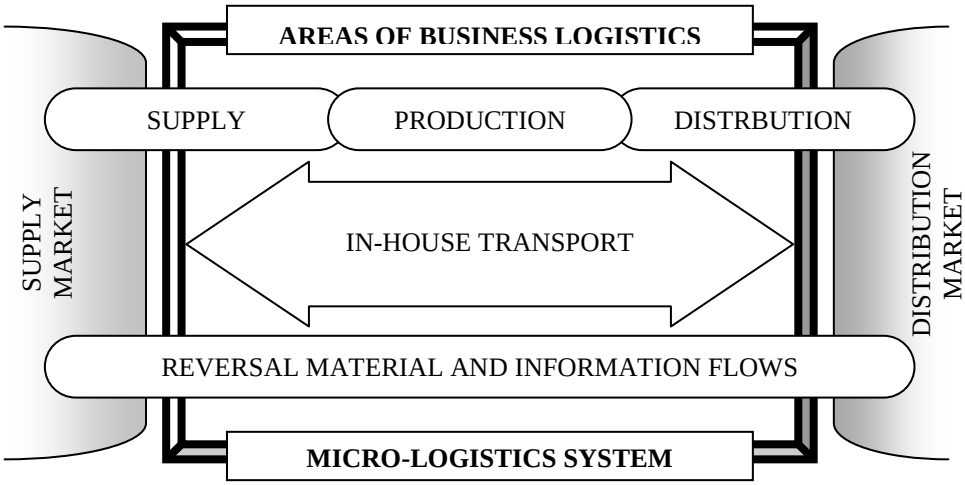

Figure 2: Status of the in-house transport (Seidl and Šimák, 2006)

– **Adapting to the factory transportation** the dynamic changes around. The crucial changes are long term, which can be expected in advance (e.g., temporal and structural parameters of the of manufacturing company, forecasts of energy sources for transport, etc.). Adequate response in-house transport system for these changes is to be prepared in the form of scenarios. Moreover, it is necessary to a factory transport was able to adjustment changes to the environment in short-term (e.g. temporary changes to the planned transport requirements - type and quantity of means of transport, place of loading and unloading time parameters), (Pernica, 2005).

The basic elements of in-house transport system are shown in Figure 3.

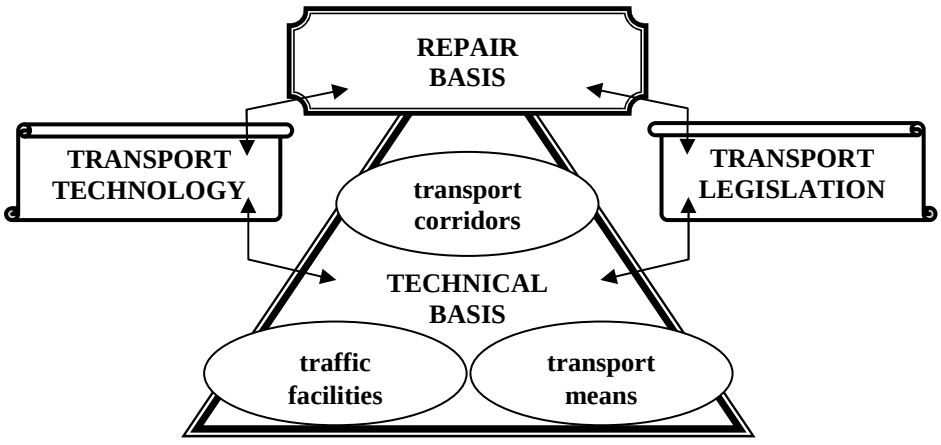

Figure 3: Transport system elements (Seidl and Šimák, 2006)

By location realization is possible in the factory transport system to identify three types of transport performances:

– **External,** which provides material nd information flows outside the building business. This transport is close to the conditions and

parameters of public transport carried out by specialized carriers;
- **Inter-objects** which provide material and information flows between objects within an enterprise (warehouses, manufacturing and assembly halls, operations);
- **Intra-objects** which provides material and formation flows within various business objects (store, workshop). These performances are associated with a range of technology and handling operations (measuring, weighing, counting quantity, cleaning).

This divisions is to be taken into account when deciding on the establishment of private transport (in-house), as well as the optimal distribution transportation service between its own performance internal transport and external (foreign) carriers. This decision is particularly the external traffic (a typical example. in building organizations). Inter-objects and mainly intra-objects transport provide only limited opportunities for the application of external carriers (direct link to the technological processes of production, the need for specific transport and handling means, competence in one place).

Economic criteria are fundamental when deciding on their own or foreign transport. Except exact financial costs and their expected return should be taken into account of other criteria (operational performance of transportation requirements, knowledge of the conditions by own staff, time and capacity utilization of vehicles).

Draft in-house transport system based on the following input parameters (Schulte, 1994):
- transportation subject (structure, properties, method of packaging),
- place where is the end of the movement,
- transportation time and weight (volume) of the goods.

Own transport scheduling processes, the factory transport includes:
- disposition of fleet scheduling,
- scheduling road networks,
- information systems for transport networks,
- scheduling the deployment of vehicles (transport capacity allocation, utilization management, route planning, transport means).

INFRASTRUCTURES OF IN-HOUSE TRANSPORT

The factory transport infrastructure is part of the overall enterprise infrastructure and its construction is a crucial condition for ensuring the internal material and information flows. It can be defined as a set of line and node elements strictly necessary for the movement of vehicles, including ensuring the security of this movement and also for the maintenance of vehicles and equipment in working order. In broadest definition includes internal transport infrastructure themselves vehicles and equipments.

It is built to ensure that these basic features:
- ensure that legitimate users transportation requirements,
- guaranteeing the required transport service within a specified area,
- ensure the defined quality levels traffic and transportation processes with emphasis on the safety of all these processes, as well as the integrity of the subject shipment,
- maximum respect for environmental requirements,
- minimization of spatial and energy requirements.

As in-house transport system normally uses multiple modes of transport and its infrastructure is quite multifaceted. The basic elements and devices are:
- set aside areas (or land),
- built transport routes (land rail, trackless, overhead rail, cable, pipe, special),
- objects and equipment for crossing routes, avoiding, turning, running decommissioning vehicles (level, interchanges, rail),
- spaces and buildings for operating along the transport routes (for inspection, maintenance, repairs, etc..),
- adjusted areas for loading operations (loading, unloading, transhipment means of transport),
- interlocking, signals, lighting, security, information and communication devices and traffic signs,
- necessary the building service personnel and vehicles (administrative, parking, repair, inspection points, etc.),
- other objects and devices that are part of the energy infrastructure the enterprise and provide a source of energy (particularly electricity and fuel) to operate in-house transport system.

Each of these elements is the operation of the system as a whole different importance. It is therefore necessary to distinguish those elements of

infrastructure, the failure or withdrawal would result in an extraordinary situation in the enterprise. These elements can be identified as critical and as a set of critical infrastructure. One of the challenges of corporate management is to assess and identify the elements of critical infrastructure, which is subsequently to be given special attention in their construction, operation and protection.

The process of identification and selection of critical infrastructure the enterprise is complicated and virtually unique the each enterprise. In principle it can be established only very general terms the area of business activities that are most dependent on the correct functioning of traffic, and then determine which elements of transport infrastructure are absolutely necessary. Criteria for selecting elements of critical infrastructure must be based on the expected impact of losing the functionality of a particular element of (Law 45/2011, 2011):

- health and lives of employees, possibly out of enterprise (estimated numbers of killed and injured),
- the enterprise economy (range economic losses, a significant decrease quality of output of goods and services, impact on other partners in the logistics chains),
- threat to the environment,
- time and severity of the possible loss of production,
- the possibility of temporary loss of production coverage using other sources.

Quantification of the various the criteria must be based on specific internal and external conditions of each the enterprise. Assessment the criteria must be complex, applying appropriate methods multi-criteria analysis.

CONCLUSION

In management and optimization of supply chains it is necessary to give permanent attention to transport issues. Share of the customer service quality and timely delivery of consignments to undertake specific expenditures, may constitute a significant proportion. Delimiting the scope of traffic to out-plant and factory is the motive for the coordinated search of reserves and savings to reduce transportation demands throughout the logistics chain. The factory quality management is achieved by optimal transport costs in other areas of trade logistics, especially in storage and material handling.

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