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TO THE NOTES ON THE KEY ELEMENTS OF THE SUPPLY CHAIN AND THE SPHERES OF LOGISTIC SOLUTIONS FOR THEIR MANAGEMENT

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Abstract: *The research presents a short reference review of the key elements of the supply chain as characteristics of establishments and the spheres of logistic solutions for their management.*

Key words: *supply chain, establishments, logistic solutions*

Being a system of mechanisms and distributional solutions, the supply chain performs the fuction of delivering materials, transforming them into intermediate and final goods, as well as its distribution to the end consumers. Here the main elements are the logistic complexes, which are warehouses, distribution centers, logistics terminals, logistics centers and freight villages. These establishments are logistics systems where considerable amounts of products are accumulated and the efforts and abilities of vast number of producers, suppliers, transportation companies, logistics operators and sellers are integrated. The mentioned logistics complexes function as a mediator in thethe supply chain and they offer their customers the basic logistic services – warehousing, processing and distribution. They are specialized in performing logistic activities and associated services, aiming at improving customer service, minimizing the expenditures and making better profit. It is characteristic of the logistics complexes to be able to receive huge amounts of products, to store and process them, after that they distribute and deliver them to the end consumers, for whom they are designated. They differ in their scale and their capability to perform additional operations on the products which adds on to their initial value. [3, p. 14; 16, p. 11, p. 35 – 36; 17, p. 145 – 146].

The logistics complex in which the products are stored until the moment for their usage comes, is the warehouse and when the logistics complex is

loaded with more functions, it is called a distribution center. Usually the warehouse serves the local users and its construction and equipment does not call for huge investments and they are possible for a producer or trader. The warehouses are a compromise solution which enable the storage of goods in intermediate points between the producers and the consumers and its basic function is to store and sort. According to the criterium access, warehouses are devided into private and public, and according to the criterium specialization, they are specialized and universal. The criterium range defines them ad local and regional and according to their equipment, they are partially euipped and medium equipped. The volume of the performed work by the warehouses suggests to devide them into small and medium and according to their ownership, the warehouses are exclusively private. [4, p. 235; 11, p. 25; 13, p. 163; 15, p. 67; 16, p. 36, p. 37, p. 40; 17, p. 146, p. 147, p. 148].

In the dynamically changing market sphere, the distribution centers function as warehouses and warehouse areas, where one or a few producers accumulate huge amounts of products before distributing and shipping them to end consumers. The distribution centers are usually oned by the same producers of by a wholesaler, who functiones as a distributer. In turn the distributers trade the products by selling them with a discount or a markup to the retailers or directly to the companies. In this case they use the services of brokers, dealers and agents who directly contact the actual or potential customers and thus they contribute to the increase of the sales volume. According to the access of the distribution centers, they can be used by one, by a few or by all willing producers. Specialization is another criterium according to which the distribution centers are devided into universal and specialized; and their territorial range defines them as local, regional and national. [2, p. 290; 11, p. 25 – 26, p. 27; 16, p. 36, p. 40 – 41].

The warehouse complex aquires the characteristics of a logistics center when it is larger and has terminals, bank offices and insurance offices, areas for rent, transportation vehicles, etc. which allows the warehouse complex to serve its customers in a more complex way. In its essence the logistics center has warehouses and warehouse areas which have considerably bigger capacity than the distribution center and they are built by big distributers, transporters and forwarders with the idea to offer a wide variety logistic services to their customers. The logistics centers have automobile and, in some cases, railway terminal; they are not provisioned with intermodal equipment and they are located near transport hubs, near transport arteries with big traffic capabilities and near big cities. These centers have modern loading and unloading and communitcation equipment which allows them to quickly handle vast amounts of products and they operate on a national scale. According to the criterium access, which the logistics centers offer, they are private and public and according to their range, they are classified into regional, national and

international. They can be also grouped accordion to their integration scale. [13, p. 118; 16, p. 36 – 37, p. 38, p. 42 – 43; 17, p. 146, p. 147].

Being situated at an intersection point of transportation arteries, the logistics terminal is a complex in which huge amounts of loads enter to be distributed to end consumers. This is transport and distribution hub, located in a certain geographical region which handles big quantities of products, deginated to be distributed to end consumers, located mainly in the region being serviced. The first division of the logistics terminals is according to the possibilities for combinining the freight flows towards them in order to handled and distributed: from point to point, international line, domestic line, hub. According to the geographical coverage, volume of work performed and capacity, they can be defined ad local, regional, national, international, basic; and according to the loading and unloading equipment with which they handle the incoming and outgoing freight loads, the logistics terminals are classified into railroad, marine, river, automobile, airport, container, modal, intermodal. Their specialization defines them as specialized and universal and according to their ownership, they are private, mixed and state-owned. Their integrity scale classifies them into regional, national and global [16, p. 38, p. 41 – 42; 17, p. 147 – 148].

Above all in the hierarchy of the logistics complexes is the freight village which has a bigger capacity and its structure includes warehouses, distribution and logistics complexes, and the compulsory intermodal terminal. The freight village offers fast and cheap cargo handling, immediate transfer of containers and shipments from one type of transportation to another, a wide variety of services with added value to the customers, as well as public services which can be used by the personnel working in the fright village, and the village itself is a collective term and has supranational significance. Practically, its structure contains all the above mentioned logistics complexes and a main characteristics is that all the operators who perform the respective activities and services can be located in the fright village if they want to and if there is possibility for this; thus they have direct contact not only with their customers but also with the other operators. The universality of the freight villages suggests that: they are public according to the access; universal according to specialization; regional, national, international and global according to the scope; complex according to specialization; regional, national, international and global according to the range; complex according to equipment; big according to the volume of performed work; private and private-public according to ownership; integrated and non-integrated [16, 37, с. 38 – 39, с. 43; 17, с. 147, с. 148].

In regard to the presented establishments, wich are also logistics systems, the goal is integrated management of the material, as well as the accompanying information and financial lows in order to achieve high quality service of the customers at minimum expenditures. It is exacly the logistics which seeks universal management solutions for rationalization of the processes and its

achievement is by performing the logistic operations, logistic functions and by structuring the logistics system. Considering this, regardless of the fact that the basic elements are scattered, they work together for the effective functioning of the system with the respective administration [3, p. 8 – 9; 17, p. 23; 18, p. 1].

The characteristics of coordinated joint action among all the elements from the many, is the synergism which brings growth to the scale of the internal orderliness into the totality and the significant feature is the synergy which brings the so-called synergetic effect. This achievement is bigger than the sum of the activities of every element on its own and the scientific research in this sphere are a privilege of the synergetics. It deals with the synergy in the action of multiple subsystems and the result is that on a macroscopic level (visible for the naked eye) a structure with its corresponding functioning evolves and respectively there is need to manage it [5, c. 85].

The direct administration, i.e. management of the logistics system, is performed by logistic solutions which are an act of purposeful balanced correction of the logistic situation, solution of a problem or a variation of influence upon the system and rationalization of the processes which happen in it. In this regard, some of the basic spheres of logistic solutions are:

- customer service – the basic aim of the logistics in this sphere is to be provisioned at the necessary level. The direct link between the business strategy of the establishement and the logistics is implemented by defining the level of service of the end consumers. The level is both a starting point and a link for every other solution. The direct link between the business strategy of the establishment and the logistics is achieved by defining the level of end consumers service. The level is both a starting point and a connecting link for every other solution;

- vertical integration and outsourcing – this sphere of logistic solutions is directly connected with the structuring of the logistics system. Its importance increases and this is due to the fact that the practice of assigning logistic tasks to external suppliers (logistic outsoursing) and the development of the logistic sector is increased. The taken factual decisions in regards to defining the level of vertical integration (the establishment produces its materials or it sells its own products) or outsoursing, have their own peculiarities in the supply, production or distribution;

- territorial location of the permanent facilities – the space factor is of huge importnance for the logistics. It defines the scale and complexity of the logistic activities, as well as the range in which every other decision is made and the physical logistic activities are performed;

- information ans communication system – all the decisions in the sphere of the logistics depend on the range, quality, plausibility and timeliness of the information and the prerequisite for this is the good information and communication system;

- reserves – this is a key management sphere in the logistics. The decisions in this direction directly influence the level of service and the logistic expenses, i.e. by managing the reserves, the material flows are controlled per se;

- transportation – among the essential transport solutions of the establishment are the choice between own and rented transport, choice of the kind of transport, etc.;

- storing – the basic solutions at the warehousing systems are: the choice between own or rented warehouse; level of centralization; defining the number of warehouses, etc.;

- reverse logistics – the solutions in this sphere are connected with development and operational management of a system for turning back products and packages, choice of methods of utilisation of the returned products, connecting the reverse logistics with the traditional one, etc. In this connection it should be noted that all ranges of solutions for management implementation, which are valid for the traditional logistics, are true for the reverse logistics [1, p. 35; 3, p. 15 – 16; 8, p. 42, p. 46 – 48, p. 70; 9, p. 6; 12, p. 160; 13, p. 59 – 60, p. 61 – 62, p. 63 – 64; 17, p. 68 – 69; 19, p. 179; 20, p. 53; 21, p. 172].

The presented spheres of logistic solutions according to the scale, the period of operation and the level of management at which the decisions are made can be devided into: strategical – they define the configuration of the system; tactical – related to the planning and control; operational – related with the current implementation. In this regard the important management principles are:

- process approach – here the wanted result is achieved more efficiently when the activities and the related resources are managed like a process and thus the advantages are: less expenditures and shorter cycle as a result from the efficient resource usage; improved consistent and predictable results

- systematic approach – this approach contributes to the efficiency and effectiveness of the establishment when achieving its goals and at the same time is a combination of complex analisys, systematic modelling and systematic management. In this regards the systematic approach considers the establishment as a whole open system [6, p. 13; 7, p. 33; 8, p. 49; 10, p. 35 – 38; 17, p. 69 – 70].

Every system consists of key components, which are for the management model of the establishment system: input; transformation process; goals; output; feedback; control. In turn the elements of the establishment as a system are:

- the input – a specific part of the system where all its elements are combined, which are influenced by the invironment and are transformed further in the system;

- the process (processing, transformation) – this is the transformation of everything which was received at the system input;

- output – it combines all the elements of the system through which it influences the environment. It is another specific part of the system where the results from the transformation process are received;

- control – it is necessary to control the performance of the system in order to ensure the achievement of the goals;

- feedback – it is used to compare the goals of the systems and depending on the received results, if necessary, the input or the transformation process are controlled.

- environment (borders of the system) – this is a characteristic which is presented by defining its sizes. The system and its characteristics are inside the borders – the microsystem, and outside the borders is the rest of the world – macrosystem. In a broadrer sense, the environment of the system is all the elements wich are not included in it, i.e. the worls in which the system exists [14, p. 2-2 (fig. 1) – 2-3].

The efficient functioning of a given establishment suggests that it identifies and manages multiple interrelated and interacting processes, i.e. to achieve synergetic effect with the integration of the process and systematic approaches towards the management. The results is comprehensiveness in the management of the processes and and their rationalization. This is the logistic approach. We have an integrated management system which combines different subsystems (elements) not as separate component but with a clearly set goal by considering all the practices in their internal management. The administration of this logistics system is a prerequisite for the effectiveness and efficiency of the establishment when achieving its goals [14, p. 9-2, p. 9-8].

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