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Original Contribution

BASIC STANDARD ELEMENTS IN LOGISTICS

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ABSTRACT: *The paper examines the relationship between standardization and logistics, through the application of the most - widely used methods for transporting goods by means of different transportation. It also deals with the issues of securing cargo, grippers for loading - unloading work and storage systems as parts of the logistic system.*

KEY WORDS: *Logistics, Standardization, Transporting goods, Cargo, Pallet, Container.*

1. Introduction

Modern society is so widely connected with standardization that without any special analysis it is difficult to determine its benefits for the economy, trade and public life. For nonspecialists all results of the standardization activities are generally considered to be logical and reasonable. Nonspecialists do not take into consideration all difficulties and the huge amount of efforts for achieving the standardization results [1]. Standardisation is a scientific, technical and socio concept that includes a complex system for creating and publishing rules, requirements, indicators, materials, units of measurement and many other features, concepts and terms for all events - products, processes and services which are basic for the economy and society nowadays.

2. Related work

According to the definition of the term - standardization is an activity for creating regulations for actual or suspected problems.

In the years following World War II, logistics became increasingly prevalent in industry and trade. It entered everyday practice and daily life. Consequently, it also became subject to standardization.

Nowadays the problems of supply, warehousing, raw material flows, the production marketing and shipment could be solved by the integrated approach. Engineering logistics uses this approach. The engineering logistics offers the most favorable conditions to reduce production cost and increase productivity with the least possible investments.

The optimal price of a supply is directly dependent on the characteristics of freight. Changing the parameters of the load is one way to achieve that price. There are alternative requirements for the size of the load unit. Producer and consumer prefer over packs, saving additional funds for its processing. Reversely, Transport Company and Storage Company with an intermediate function prefer to work with consolidated cargo [18].

Consolidation is grouping of several goods following certain rules and with the help of some equipment in one shipping unit. Grouping is done in packages, pallets and containers are the most typical example of the application of standards in modern logistics.

The most common packet load is constructed in the form of the pallet. This is a very solid platform which keeps the goods, which are attached at the bottom by horn – like lifting device. Usually they are made of wood, metal and plastics. The plastics are more expensive, that's why they are rarely used.

ISO International Standards Organization introduced new standards of cargo conveyors in the postwar period created. These standards imposed another restriction. The containers should not be larger than the maximum size allowed in the countries where they are transported both by road and railway. As a result, their size is set at 2.4 meters now. Because of the walls thickness the 1200 mm pallets could not be put at double with. In accordance with this new, 1100 mm square pallets were constructed [14].

Due to the International Plant Protection Convention (abbreviated IPPC), most pallets shipped across national borders must be made of materials that are incapable of being a carrier of invasive species of insects and plant diseases. The standards for these pallets are specified in ISPM 15.

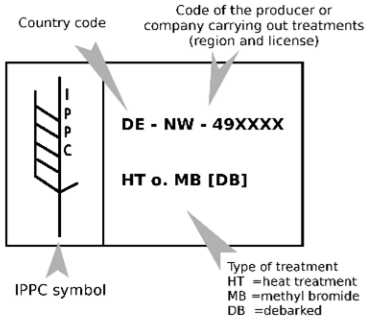

Fig. 1. IPPC marks on a pallet from Germany (DE)

International Standards for Phytosanitary Measures No. 15 (ISPM 15) is an International Phytosanitary Measure developed by the International Plant Protection Convention (IPPC) that directly addresses the need to treat wood materials of a thickness greater than 6mm, used to ship products between countries. Its main purpose is to prevent the international transport and spread of disease and insects that could negatively affect plants or ecosystems. ISPM 15 affects all wood packaging material (pallets, crates, dunnages, etc.) requiring that they be debarked and then heat treated or fumigated with methyl bromide and stamped or branded, [17] with a mark of compliance

The other widely used logistic element is the container. It is also a subject to standardization.

Containers are standardized transportation equipment (ISO 668, ISO 1491) used to transport different goods by road, railway and water transportation (mostly marine). Transportation containers are processed by specially manufactured for purpose cranes. They are stored in special containers terminals. Then they are transported by sea with specialized container ships.

According to the International Organization for Standardization (ISO) definition, the container is a transportation device, having the following characteristics [15]:

- it keeps its quality for a long period of time; it is strong enough and that's why it is used many times;
- it is specially designed for transportation of goods by means of different kinds of transport without any reloading;
-it is equipped with devices which facilitate its services especially when loading from one vehicle to another;
- the construction of the container makes the process of loading and unloading easier;
- its useful volume of at least 1 cubic meter

Fittings or locks are very important element of the containers were. There are eight of them. They are located at each corner of the container and thus they help the processing equipment hold the container. With ton containers these elements are standardized BDS 12138-74.

One of the most important factors in determining the economic efficiency of container transportation [8] is the ratio of the mass of the load mass (M) to the distance of transportation (L)

$$K_1 = \frac{M_T}{L} \qquad (1)$$

For example, a container whose length is *6058 mm*, traveling from Paris to Frankfurt, carries more cargos than a container whose length is 1*2192mm*, caring cargos from Paris to New Orleans.

The ratio of cargo to useful volume of container (V) is of great importance for the choice of container parameters. The bigger the container's volume is its lower average load.

The choice of container's type and parameters depends on some restrictions connected with the transportation vehicles handling equipment and loading ramps.

Certain calculations are necessary to make the container's use effective.

3. Conclusion

In conclusion, it should be noted that standardization is the most effective way to facilitate trade, to achieve certain social and political goals and to regulate the economy. Therefore, the standardization work is organized at different levels - international, regional, national, sectoral [12].

Standardization is part all spheres nowadays. So the logistics is not an exception. Standardization concerns all steps in the process of transportation, strengthening packaging etc. The main goal of standardization is to make easier the access to different goods and materials at the lowest possible cost. For these reasons in spite of its voluntary character standardization is widely used in countries, which are members of the European Union.

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