REUSABLE PLASTIC CONTAINERS IN THE FUNCTION OF REDUCING LOGISTICS COSTS

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Abstract

One of the main fields of logistics of production and sales-oriented companies is the management of containers. On the other hand, retailers need the profitable product distribution solutions to maximize efficiency and effectiveness of business processes. Practice has shown that the use of reusable containers brings significant savings in the optimization of logistic processes. The fundamental task of reusable containers is cost saving in transport itself, but also saving through the reduction of the cost of transport packaging. This paper presents the application of reusable plastic containers in retail chains in Croatia and worldwide through the supply chain, while demonstrating the benefits and possible drawbacks of application of this type of transport packaging. The purpose and objective of the research is to direct the importance and justification of the use of reusable containers and the benefits that can be received by its application, or indicate any problems that occur in comparison with other transport packaging.

Keywords: reusable plastic container, logistics costs reduction, transportation of reusable packaging, monitoring of packaging, trends in transport packaging

1. INTRODUCTION

Modern logistics only recently gained importance, especially through optimization by providing logistics solutions. Along with the cost of human resources, logistics is one of the biggest expenses of any company which the companies must leverage in order to achieve competitive advantage in the market, or to maintain market position. Within the company logistics and from the cost point of view, packaging with transport represents an important item which companies mustfollow to keep pace with the world's largest manufacturing and trading companies.

During the last ten years packaging has significantly evolved, sothe place of past transport packagingincreasingly takes Shelf-Ready Packaging(SRP),or transport packaging becomes the exhibition packages on the shelves of stores. A significant breakthrough has been made by the Reusable Plastic Container (RPC), which has largely supplanted the use of cardboard as a current main form of transport packaging.Because of their specificity,more and more modern retailers use Reusable Plastic Containers.

Due to high investments in the procurement of Reusable Plastic Containers and relinquishing careof package management, companies usually resort to the outsourcing of the logistics, whichis then typically performed by highly specialized logistics companies.

2. REUSABLE PLASTIC CONTAINERS AS A FORM OF LOGISTIC PROCESSES' OPTIMIZATION

Reusable Plastic Container is a plastic packaging intended for repeated use, which is used primarily to transport fresh produce from the producers to the leading retailers. Empty RPCs save space and can be safely placed on each other. This means that fewer pallets and containers should be returned, which leads to lesser loading of the trucks and higher efficiency during the truck loading-unloading. After delivery of empty containers in the central warehouse, they are placed into pallets for taking over. Due to the fact that RPCs have a single height of 34.3 mm it is not necessary to stack them by types(Ifco Systems, 2012.).

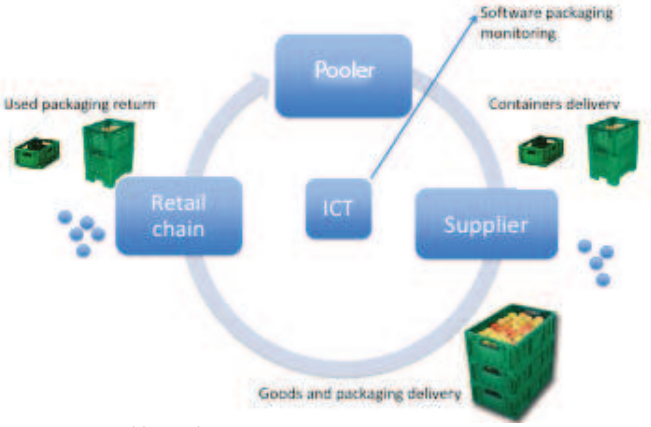
The use of Reusable Plastic Containers more and more displaces the use of cardboard and wood packaging, which has so far been the main form of transport packaging. It is the packaging that is getting more important through the preservation of the environment, the savings in the processes of primary and secondary distribution (through greater utilization of transport capacities), standardization of packaging (all packaging looks identical) and a reduction through the Shelf-ready packaging. Substitution of cardboard with the RPCs provides the manufacturers and retailers the benefit of cheaper transport through greater utilization of transport capacities, which are given by using the RPCs. RPCs can be stacked in height unlimitedly, considering that there can be no crushing and damaging of products. As such, it is convenient for transportation of the goods, it is foldable and allows very low-cost reverse logistics.

Due to reduced logistics costs and the environmental acceptability of returnable packaging, the same is significantly more preferredby the ultimate consumers than the cardboard and wood packaging.By reusing returnable packaging, we reduce energy and material costs. Dematerialization pushes manufacturers and distributors to find new ways to safely transport the goods while using less material.(Graedel T. E. & Howard-Grenville J. A., 2005., p. 401).

2.1. Logistics concept of reusable plastic packaging outsourcing

The trend in the packaging business worldwideis increasingly based on the concept of outsourcing, and the packaging trade is increasingly left to specialized logistics companies.Many large companies worldwideare engaged in these industries. In our region such operations have until now been virtually unknown. Reusable Plastic Container is rented to producers according toturnover, who then pack the goods according to the Shelf-ready principle, and deliver it as such to the retailer who sets this form of packaging as a condition to the supplier in order toachievesavings inlogistics processesand tostandardize thepackagingon his shelves.

Figure 1. The concept of working with RPC packaging



Source: Created by author

2.2. Pooling

Pooling is a resource management term that refers to the grouping together of resources (assets, equipment, personnel, effort, etc.) for the purposes of maximizing advantage and/or minimizing risk to the users (Wikipedia, 2012.).

The tasks of apooler:

- invests in a fleet of reusable packaging
- invests in large systems, washing and maintenance of packaging
- takes care about safety and hygiene
- takes care that the user has always ready packaging
- takes care that the packaging is not lost or stolen
- unifies transport units
- reduces the work in the store
- reduces the costs of packaging, transport and trade
- better keeps the goods in containers
- multiple use for environmental sustainability purposes

Figure 2. Users of pooling world wide:

Source: Created by author

2.3. Segments of the usage ofreusable plastic containers

Reusable plastic containers are most commonly used in the segments of fruits and vegetables, fresh eggs, the segment of fermented products, snack products, milk and juices... Retailers tend to introduce more products in this form of packaging in order to standardize the appearance of the shelves.It is expected that more than 50% of fresh food products are going to be packed in this form of packaging, which will realize additional savings in the supply chain.

Figure3. Fruits and vegetables segment

Source: eLogLLC for logistics services.

Figure 4. Fresh eggs segment

Source: eLog LLC for logistics services.

Figure 5. Fermented products segment

Source: eLog LLC for logistics services.

Figure 6. Snack products segment

Source: eLog LLC for logistics services.

Figure 7. Fresh milk and juice segment

Source: eLog LLC for logistics services.

2.4. Fleet maintenance

Fleet, or the amount which the RPC Pooler has after a particular usage cycle,passesthe packaging safety control, where the damaged packaging is repaired. In this case, since it is an outsourcing decision, the packaging is owned by thepoolerand he shall bear the costs of maintenance (cleaning and repairs) of the package. Washing is done by the highly automated washing machines.

3. THE BENEFITS OFREUSABLE PLASTIC CONTAINERS' USAGE

By considering the costs of new packaging,all factors must be taken into account. This includes the cost of packaging materials, labour, changes in packaging, handling, and potential changes in the condition of the product (Kader A., 2002.).

Palletization and handling include the following costs:

- Changes in stacking on a pallet and efficiency
- The work, materials and equipment for the unification of pallets
- Compatibility with a variety of pallet materials and substitutes

Research which the author conducted on a trading company and suppliers has shown numerous financial and other advantages of using Reusable Plastic Containers, which can be divided into two main groups:

Benefits for retailers

- Unification of packaging which results in better management of goods
- Better stacking resulting in cheaper distribution
- Neater shelves, more space hygiene
- More flexible retail space
- Reduction of labour in the shops
- Reducing waste production
- Longer shelf life of goods - less deterioration of the goods

Figure below on a specific example shows tidiness and orderliness of the shelves, achieved by substituting cardboard with RPC, which will also result in the disappearance of the need for waste disposal.

Figure 8. An example of substitution of cardboard with RPC

Source: Created by author.

Benefits for Suppliers

- Always ready packaging
- No degradation of packaging in a humid atmosphere
- No packaging cracks - the destruction of goods in transit and storage
- Stacking more goods on the pallet and cheaper transport
- Better ventilation that might affect the longer shelf life of the goods
- Tighter binding for the buyer
- Cheaper packaging per package unit
- No palletization, unlike cardboard packaging

Financial benefits of using RPC are clearly shown in the following table, which also clearly demonstrates the cost savings of using RPC packaging expressed in KN per piece of transport package. Unlike the costs arising from packing the goods into cardboard, with RPC there are no costs of energy, gluing, and the palletization is likewise much lower. Transport of the goods is much cheaper by using RPC since the RPC is a tight package, so a greater quantity of goods can be packed onto the pallet than while using the cardboard packaging. Besides, when using RPC there can be no crushing of the goods in the transport package unlike the cardboard package, where frequently occurs deformation of lower boxes on a pallet due to heavy load and manipulation.

Table 1. Comparative view of the costs by type of packaging

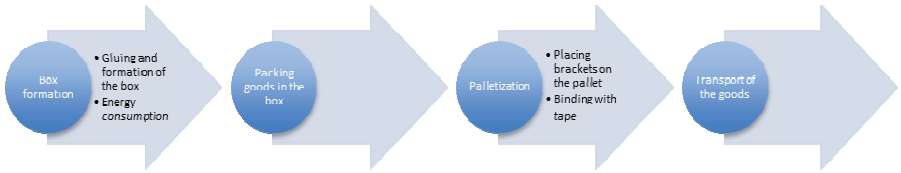
CARDBOARD		
DESCRIPTION	Quantity /truck	kn/piece
Transportation of empty containers	9.900	0,30
Box (cardboard)-cost		3,88
Gluing and formation		0,50
Energy		0,10
Palletization		0,18
Transport of goods		2,27
TOTAL COST/piece		7,24

RPC		
DESCRIPTION	Quantity /truck	kn/piece
Transportation of empty containers	7.920	0,38
Box (RPC)-rent		4,00
Box formation		0,20
Energy		0,00
Palletization		0,09
Transport of goods		1,89
TOTAL COST/piece		6,56

Source: Created by author.

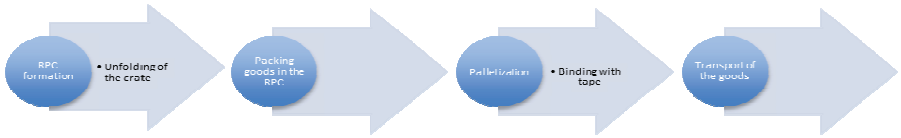
Packaging formation and manipulation can also be comparatively examined on figures 9 and 10, from which the differences in two types of packaging are visible. When using the box in the process of formation we have gluing, energy consumption and putting brackets on a pallet, which is not present in the same process with RPC, thus significantly and primarily affecting financial savings.

Figure 9. Process of box formation by the manufacturer, palletization and delivery to the customer



Source: Created by author.

Figure 10. Process of RPC formation by the manufacturer, palletization and delivery to the customer



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5. THE ASPECTS OF USING RPC PACKAGING IN RELATION TO THE CARDBOARD

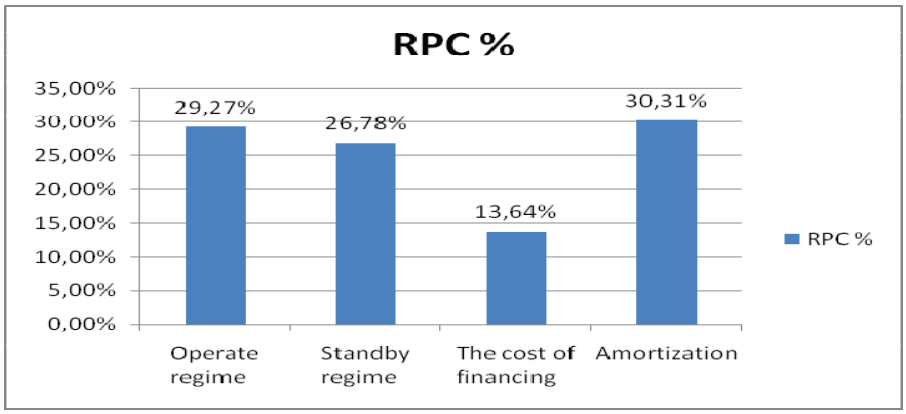
In the whole process of supply chain, there is a problem of the use of different types and dimensions of packaging materials. Dimensions are non-standard, which often causes problems in the storage and distribution, as well as on the shelf in a retail chain. To bypass these problems, it is necessary to standardize the packaging.

The big problem that occurs in the supply chain concerning the usage of disposable cardboard packaging is the irregularity that results from the dissolution of pressed cardboard, which often results in high levels of damage to the goods due to manipulation (storage and transport). Also, in retail chains, there is a problem of maintaining the FIFO method for frequent replenishment and reconstruction of shelves.Costs throughout the supply chain increase due to the waste accumulation and disposal costs.

Because of its specificities, the dimensions of the Reusable Plastic Container are adjusted to the Euro pallet and aremaximally adjusted to almost unlimited possibilities of

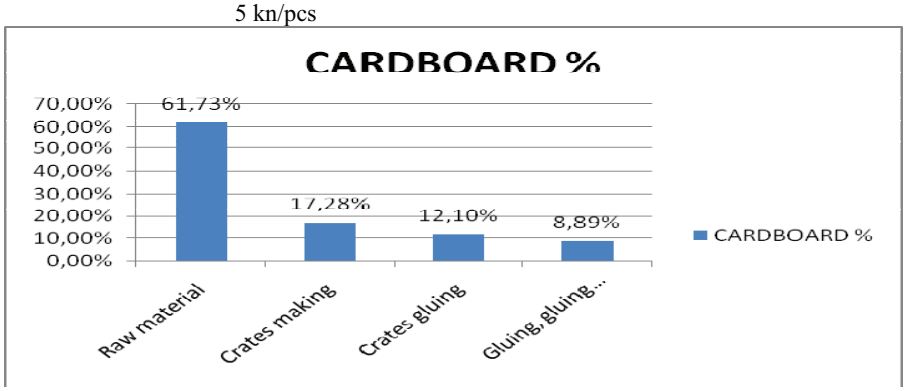
stacking in height; no cracks or crushing of the goods, no palletization or pallet wrapping in foil. Potential of Reusable Plastic Container is to create more space, a new standard crate that is easily stored and quickly and in large amounts returned to the supplier (Gustafsson et al., 2006., p. 152).

Graphic presentation 1. Comparative cost analysis of RPC at the price of 5 kn/pcs



Source: Created by author.

Graphic presentation 2. Comparative cost analysis of cardboard package at the price of 5 kn/pcs



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7. CONCLUSION

Modern logistics provides new opportunities for optimization in all its segments. Packaging as a significant aspect of logistics provides the opportunity for more efficient management of the various types of goods. So far the cardboard for the most part dominated as the main form of fresh food transport packaging,however, by its appearance,the Reusable Plastic Container more and more displaces the use of cardboard and wood packaging in this region. This type of saving is more visible for all three parties: the retailer, the distributor and the manufacturer, and is ultimately reflected in the reduction of overall logistics costs. Retailer, in order to reduce costs in the manipulation of goods askshis suppliers to deliver their goods in Reusable Plastic Containers, which directly reduces costs of manipulation, storage and transport. Workers no longer have to remove the goods from the cardboard boxes and stack them on shelves, but now simply put on the shelfthe "transport package" that is within the Shelf-ready packaging.Distributors and manufacturers achieve savings in addition to manipulation, storage and transport, simply because they have packaging always ready for their needs. Also, from an investment perspective, outsourcing reduces the need for investing in packaging,since this job is left to specialized logistics firms that deal in pooling.

LITERATURE

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