Investigation of Shelf Ready Packaging Design Solutions

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Abstract: Shelf Ready Packaging (SRP) refers to packaging that is designed to reduce the process of in-store operation; simultaneously it can enhance shopping experience and provide benefits to the total supply chain. With these features, SRP has been introduced extensively, since it enables the retailers to achieve significant cost savings by reducing labor costs, and out-of-stock situations. However, relatively little researches were done on the SRP. In addition, most of foregoing studies were very limited within the major trade companies. With this restricted knowledge, it is quite easy for us to find many design failure on SRP in the markets. For this reason, SRP design project was created to examine the problem of existing SRP in retail stores. The findings were used to find out SRP design solutions and practical ideas that could be taken forward to current merchandising conditions. Based on an observation of SRP problems in retail outlet and the findings from SRP design project, the specific problems of existing SRP can be divided into two categories: *Impractical SRP* and *Improvised SRP*. *Improvised SRP* allows us to broaden the considered points when designing SRP. Suggestion of SRP design solutions and proposed SRP designs are explicated in this paper.

Key words: Logistics and Supply Chain, Packaging Design, Shelf Ready Packaging (SRP)

1. Introduction

Packaging can be claimed as one of the most important apparatuses that create the value in the supply of everyday commodities; moreover, it plays a significant role in facilitating consumer needs and expectations [1, 2, 3]. With a high competitive modern trade and the growth of new technology in nowadays, packaging not merely functions in product protection, but also responds to the needs of consumers and supports logistics and supply chain processes. In recent decades, the current attention is focusing on how to improve the capability of packaging that can well operate in logistic procedure. Another consideration is to find the ways in which packaging that can be suited for wholesale and retail display spaces. With these requirements, Shelf Ready Packaging (SRP) has been introduced extensively, since it can be able to unravel the problems that caused in shelf display and logistics procedures [4].

Even though, the Shelf Ready Packaging (SRP) was recognized as one of the best practice that enables a better product availability and visibility to the consumer with more efficient replenishment operations, but there are very little research has been done so far regarding its principle. According to this limit, the objective of this paper aims to find out an alternative solution that can help us to eradicate the problems in SRP. For this reason, the SRP project was conducted to examine the problem of existing SRP in food stores. The five basic principles of SRP functional requirement including easy to identify, easy to open, easy to shelve, easy to shop and easy to dispose of were used as a ground theory to find out the SRP design alternatives and explore the practical and proposed designs of the SRP that could be taken forward to current merchandising conditions.

2. The principle of shelf ready packaging

Shelf Ready Packaging (SRP) is synonymous with RRP (Retail Ready Packaging), it can be described as a product that comes in a form of a ready merchandised unit. It allows an optimization of shelf replenishment and enhanced visibility to the customers [5, 6]. Previously, SRP was developed from a container called a secondary packaging, which has been used to protect the product during transportation. The major problem of the secondary packaging is that it was produced to function in manufacturing and distribution processes. It was unworkable when dispatching to the end destination, in particular when it was shelving by the retail staffs and shopping by the customers [7]. In recent years, it has a growing consideration in how to produce packaging that can practically work with logistics processes and in store operation, thus the secondary packaging was enhanced in response to this purpose [8, 9].

As a result of the researches accomplished by IGD (ECR UK); ECR Europe and ECR Australasia, the SRP denotes to the packages that can be performed with the five easy functions. There are *easy to identify, easy to open, easy to shelf, easy to shop* and *easy to dispose of* [10, 11, 12]. These five main characteristics are described below.



Figure 1. Shelf Ready Packaging with 5 easy functions

2.1 Easy to identify

Easy to identify refers to clearly communicated products information that can be visible on the box. It supports the choice of product correction and stock rotation, emphasizing on the distribution center, back of store and shelf replenishment. Product information can be clearly communicated and visible on more than one side of the box in order to represent the products when they are being stacked on a pallet or trolley.

2.2 Easy to open

With the purpose to avoid accident and injury, *Easy to open* signifies the package that can be easily opened in just one or two steps without the aid of tools such as knives and cutters. The opening instruction, such as how to open, how to use and how to dispose, can be able to read and easily understand by the retail staffs. Additionally, the opening process should not damage product and create a bad appearance.

2.3 Easy to shelve

Easy to shelve denotes to the package that enables one-movement in replenishing process. It must be strong enough to maintain the consumer units during replenishment and display on shelf. In this aspect, packaging has to accommodate shelf adaptation by providing more facings per package, for example more long or short side to the front.

2.4 Easy to shop

Easy to shop implies the perfect product presentation that the boxes have clean tearing edges and the highquality graphics offering endless opportunities of brand perception. It enables products to be selected and replaced from shelf space by the customers. The product information, such as product brand, size, variant and other key marketing messages should be clearly to see.

2.5 Easy to dispose of

Easy to dispose of refers to package construction that requires small amount of materials, single material is preferable, for example minimal use of cardboard can be easily flattened for disposal after use and materials can easily recycle or re-use. The disposal instruction should be displayed on the bottom side. Packaging which has multi type of materials should be easily separated for recycle process. The SRP should be easy to stack and remove from store aisles in order to keep aisles free and open to support the shopping opportunities.

The idea of SRP is not only about enhancing the products appearance. It also makes them perform efficiently through the activities in retail outlet, such as receiving and shipping, replenishment, re-use and recycle [13]. These five easy functional requirements were used as a parameter to examine the problem of SRP in the next step.

3. Methodology

In order to understand the problems of SRP and the five principle of practical SRP, the SRP project was established to examine the problem of existing SRP in retail market and to find out the new design solution, *Idea Sheet* was used as a tool to investigate SRP problems. The *Idea Sheet* consists of four main tasks, there are photo collections of SRP samples, SRP problems examining, proposing an idea that can solve the problems and explanation of an advantage of the proposed idea (See Figure 2).



Figure 2. SRP idea sheet

After completing the four tasks, the problems on the *Idea Sheets* were classified into five categories for examining specific problems of SRP. The findings were used to define the SRP design solutions and explore the

practical ideas to create proposed design solutions of the SRP that could be taken forward to current merchandising conditions. The idea sheet was developed from the idea of the card sorting method which has been proved that this method can help to develop frameworks that maximise the chances of users being able to find the needed information [14].

4. Samples selection and description

Food industry is the largest single end-use market accounting for 35% of the global packaging industry. Since packaging can take many forms, the consumption is unequal between different regions in the world and the per capita consumption is considerably higher in industrialized countries than in developing ones [15].

According to the research carried out by Smithers Pira, three-quarters of Shelf Ready Packaging (SRP) demand originates in the food sector and the key driver of demand growth for SRP will be the depended on the development of supermarkets [16]. Following this, an investigation and discussion on SRP problems of food products in supermarkets can be a good example to understand the current problems of SRP. This study investigated SRP samples from three large supermarkets in urban area of Chiba prefecture, Japan. The variety of sample is a crucial factor for this study; therefore, seventy samples of SRP were collected and classified the problems.

5. Current problems of SRP

Basically, SRP is believed to function well as long as it was produced under the five main principles [17]. In fact, none of them can be performed practically when using in every environment, for example the SRP with a cover that can be adopt as a display function will perform well when it is put on the top of shelf or at a cash point, whereas this function will be useless when the box is put on other layers of shelf. In addition, consumer units will be obscured by the edge of the box when it is put on the shelf at the eye level or higher (Figure 3).



Figure 3. SRP with a cover that can be adapted as a display

Based significantly on an observation of SRP problem characteristics in retail outlet and SRP investigation from the idea sheets, the problems of existing SRP can be divided into two categories: *Improvised SRP* and *Impractical SRP* (See Figure 4). An *Improvised SRP* in this paper can be described as a normal secondary package which has been modified by the retail staff in order to solve their problems, for example, the front panel of corrugated box was cut to make a viewing port for enabling product identification, while SRP which cannot be able to perform well with the five easy functions is considered to be an *Impractical SRP*. The most specific problems of SRP involved shelving process and opening process with 38% and 33 % respectively, while 29% are disposal, shopping and product identification problems.



Figure 4. Samples of improvised SRP on the left and impractical SRP on the right

Table 1. Classification of SRP problems

	Improvised SRP	Impractical SRP	
Difficulties of SRP 5 easy functions	How SRP to be improvised	Dilemma of impractical SRP	Suggested SRP design solutions
Identifying	Product identification on secondary pack were communicated by text only, it may not clear enough so that retail staff cut the front panel of the box to expose products visibility	The edges of the box obscure 80% height of consumer units	(1) To avoid SRP obscures consumer units(2) Making viewing port to expose the products visibility
Opening	Using aid or tool such as knife or cutter to expose the products visible to customers due to the use of hard glue and unclear instruction of opening	 Too weak material but using hard glue or too tight adhesive of SRP Too complicate opening method It can be difficult for staff to see where to start removing tear strips or plastic film Unclear identification for opening can confuse users and caused the use of a sharp tool to solve the opening problems 	 (1) Making tidy perforated or pre- cut line (2) Simple opening method One gesture or one step opening is preferable Clear opening instruction
Shelving	 Making a window on the box to facilitate product visibility for easy re- stocking Due to a big size of SRP that cannot put on shelf, retail staff creates a set of shelves by staking of multiple boxes, a bottom one is used for stock, a middle one is used to display the products while a top one can be a tray to display products as a normal shelf. 	 Weak structure of SRP (material, joining method) Potential for damaging stock and shape of the box by placing a load on top Improper stacking due to unstable base Product could be bumped, collapsed in package and damaged each other especially unstable unit pack that can result in mess inside the box 	 Making strong structure of SRP to provide support and guidance for the stacking of multiple boxes To make content slanted if directly put on the ground, or standing straight if in the shelf.
Shopping	 Cut a half of the box for making an easy to reach the products for customers Perforated viewing port applied 2 sides of SRP allowing easy access and ordered visibility. 	Ugly edge caused by untidy perforation - customers' hands could be scratched by a sharp edge or corner - create ugly look and untidy appearance to the products	(1) To provide tidy perforated or pre-cut line(2) To provide a window on SRP
Disposal	Using a sharp tool to minimize the size of waste SRP due to a hard material and too strong structure of the box.	Using blades in opening method lead to numerous of disposal materials	 Simple structure Providing pre-cut line on SRP in order to easily flatten and minimize SRP To reduce the use of adhesive

Specific problems of impractical SRP are involved the structure of the boxes, most of the samples are too weak for stacking when multiple boxes are stacked on top of each other, and the secondary pack cannot be opened easily because of its adhesive agents on the surface. Another problem is product identification; a secondary pack is generally obscured 80% height of consumer units and the small items inside are often collapsed when the customers attempt to pick them up. Most of the problems regarding packaging along the activities in retail store are the complexity in opening, picking and gripping of packages. Structure of packages that are too heavy and

hardly in replenishment can make a difficulty in stacking packages on shelf. Too hard materials and too tight adhesive in SRP structures increase the use of tools such as knife or cutter which can damage product and packaging appearance. The details of the problems of SRP problems are summarized in Table 1.

6. SRP design solutions

As a result shown in Table 1, most of SRP problems are involved in opening and shelving aspects. Through the idea sheets, the design solutions respond to these problems were suggested as follow:

(1) Making strong structure of SRP to provide support for stacking multiple boxes.

(2) Making content slanted if directly put it on the ground, or standing straight if put it on the shelf.

With these requirements, the two ideas of new SRP design are proposed in the paper. There are *Stackable SRP* and *Slanted SRP*.

A *Stackable SRP* is an imitated idea of improvised SRP that emphasizes on SRP stack ability with a particular joining method between two stacked boxes. This box has limited graphic space on SRP so that a viewing port is an important function for exposing the content visible to consumer. It is also easy to recognize the product in restocking process. Stackable SRP concept suits for the consumer packages which have stable shapes such as boxes, cans and bottles. It is not suitable for small items or unstable primary packages such as bags or sachets. In Figure 5. shows the samples of *Stackable SRP* design with two variant opening methods: (1) strip removal and (2) panel removal.



Figure 5. Proposed designs of stackable SRP concept

The idea of *Slanted SRP* provides additional function of SRP without any extra materials. With this concept, SRP can be modified to have a collapsible base or slanted option to keep consumer units stay up right inside the box. This concept was developed to two designs different in the detail of slanted techniques (See Figure 6). The first one can be slanted by making a pre-cut line between a back panel and a base panel of the box. The second one uses the base panel to be a slant base.



Figure 6. Proposed designs of slanted SRP concept

These two proposed SRP design concept are created concerning shelving function which is the major problem of SRP that can be found current markets. Other functions such as identifying, opening, shopping and disposal should be designed to meet the SRP requirements as well.

7. Conclusions

The investigation indicates that the problems found in SRP can be described as *Improvised SRP* and *Impractical SRP*. The idea of *Improvised SRP* can be imitated to create the new design of SRP concepts. It provides various practical design solutions through the improvising process such as *Stackable SRP*. While, the problems found in *Impractical SRP* reflects the points to be considered when designing SRP.

The design solutions suggested in this study can be adopted and further developed the SRP design to the multiple formats. However, design assessment and package testing are suggested to undertake before production process. It can be concluded that the practical SRP would be functioned well when it can performed well in response to the five principles. Therefore, it is necessary for packaging producers, product developers as well as manufacturers or suppliers to pay attention to the packaging needs responding retail environment and activities.

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